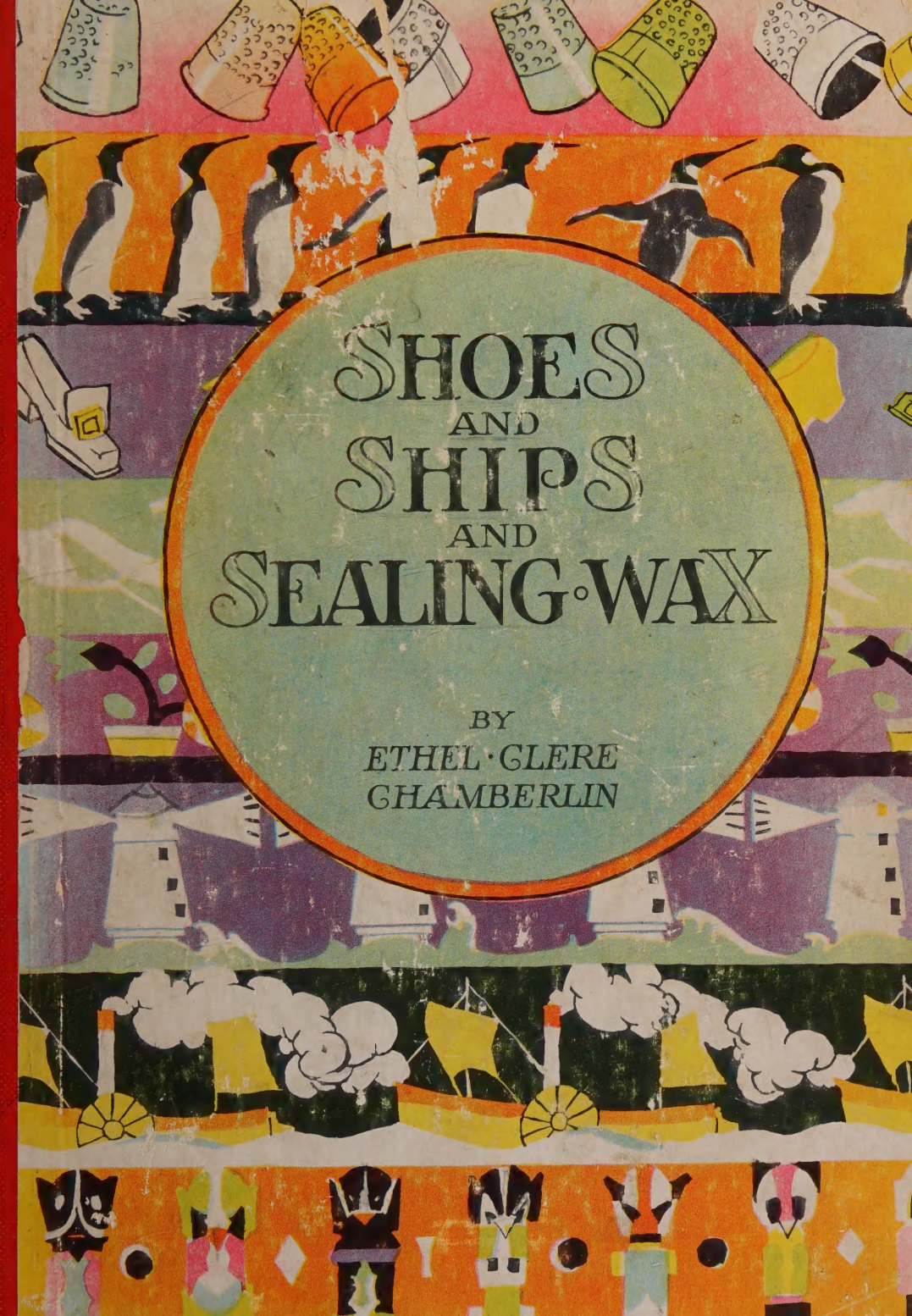




SHOES AND SHIPS AND SEALING-WAX

BY
ETHEL CLERE
CHAMBERLIN

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SHOES AND SHIPS AND SEALING WAX

Story by
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To

The Grandfathers and Grandmothers

of

WILLIAM CLERE CHAMBERLIN

and

LOUISE PRICHARD CHAMBERLIN

and their little cousins

EDWIN SANDERSON CHAMBERLIN

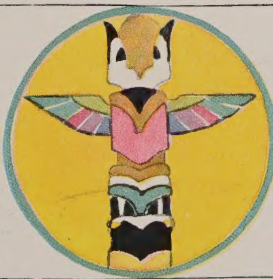
JOAN KENDALL CHAMBERLIN

MARILYN IDA HUBER

WILLIAM CHAMBERLIN HUBER

and to all others

whose Grandchildren's treasure chests of ques-
tions are always brimming over this
book is humbly dedicated





THE ORDER OF THE STORIES

*How the Stories Happened
to be Told*

The Story of the Fram

Penguins

Tipping the Hat

About Thimbles

Pianos

Newspapers

The Printing Press

The Erie Canal

The First Sunday School

The Lighthouse

About Blotters

The Atlantic Cable

About Shoes

About Spoons

Submarines

Steamboats

About Pins

About Window Panes

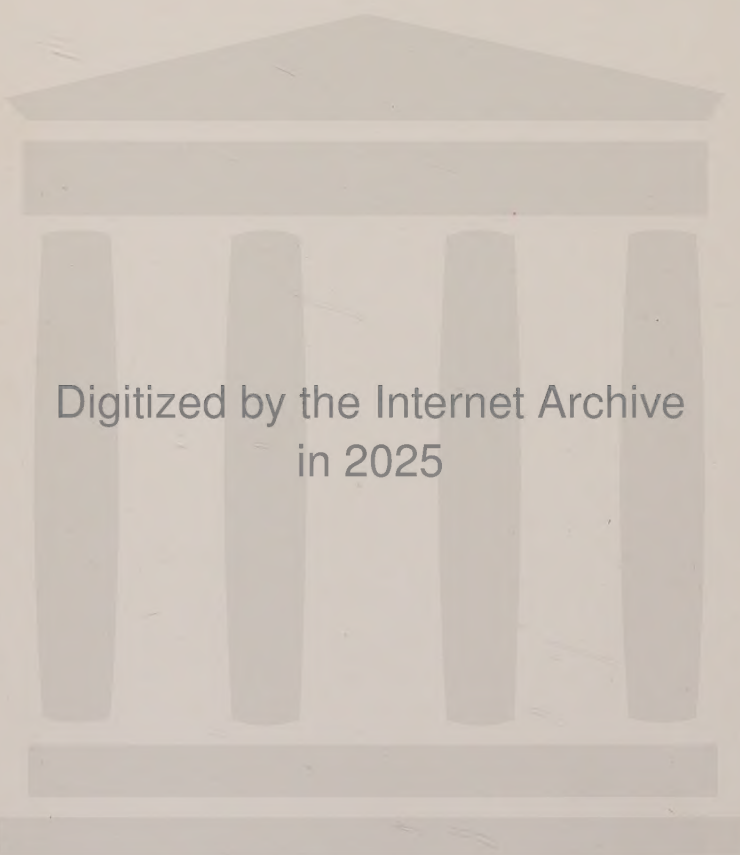
From Pine Knots to Electric
Lights

How the Beavers Saved a Town

Sealing Wax

About Totem Poles

Hiawatha, Maker of the
Wampum



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HOW the STORIES HAPPENED to be TOLD

BOBBY and Great Grandfather were very busy. On the low bench in front of them was a long block of wood, sharply pointed at the end. For Great Grandfather had promised to help Bobby build a boat. And, though they had only that very day started to work on it, the cozy sunroom was littered with chips and shavings and long curls of wood, like taffy candy.

As Great Grandfather whittled on some slender sticks that were to be masts, he whistled in two or three tones like a bird, and Bobby hummed a tune, softly, under his breath.

On the window seat Sister Sue was reading from 'Alice Through the Looking Glass.' Suddenly she laughed.

"Listen, Great Grandfather and Bobby, isn't this funny? I laugh every time I read it. It says:

"The time has come," the Walrus said

"To talk of many things

"Of *shoes—and ships—and sealing wax—*

"And cabbages—and kings

"And why the sea is boiling hot

"And whether pigs have wings.

Oh," she laughed, "it's just too funny!"

"It's funny enough," agreed Bobby, "but I would like it better if the Walrus had gone on and told something about *Shoes—and Ships—and Sealing Wax!* And that part about why the sea is boiling hot! Why, it just isn't, that's all. And every one knows that pigs never have wings!" In his excitement Bobby dropped the knife with which he was

cutting huge chips from the block of wood that was soon to be a boat.

"That's just why I like it, because it isn't so," answered Sister Sue.

"I like it, too, only I would like to know more about *Shoes—and—Ships—and Sealing Wax*. I want to know who used them first and all about them," explained Bobby.

"Well, Great Grandfather can tell you," said Sister Sue.

For Bobby and Sister Sue had found that, though it was many years since Great Grandfather had been a boy like Bobby, he was as interested as he ever was in all the things that boys like. And because he had lived so many years and had seen so many marvelous things, and had been to war, and ship-wrecked too, he always had many wonderful tales to tell. Bobby and Sister Sue firmly believed that he knew everything.

And so, this book is all about those stories that Great Grandfather told to Bobby and Sister Sue: stories that are so interesting to boys, and girls, too, because they are true, about the things that are and things that really happened.

The STORY of the FRAM

"O H, GREAT GRANDFATHER," begged Bobby, "tell us all about *Shoes—and Ships—and Sealing Wax.*"

"That's a pretty large order," answered Great Grandfather. "Seems to me that the Walrus meant to cover nearly everything when he said that. So, where shall we begin?"

"I know," exclaimed Sister Sue, before Bobby could say a word for himself, "he'll say he wants to know about ships. That's all Bobby ever seems to care to hear. He told Mother, the other day, that he is going to Annapolis when he is old enough, so he can be an officer in the Navy." Sister Sue rose from the window seat and drew a three-legged stool up close to Great Grandfather.

"The Navy is wonderful and a great education," said Great Grandfather, "but I preferred the Army." And he began to finger the brass buttons on his old Army coat.

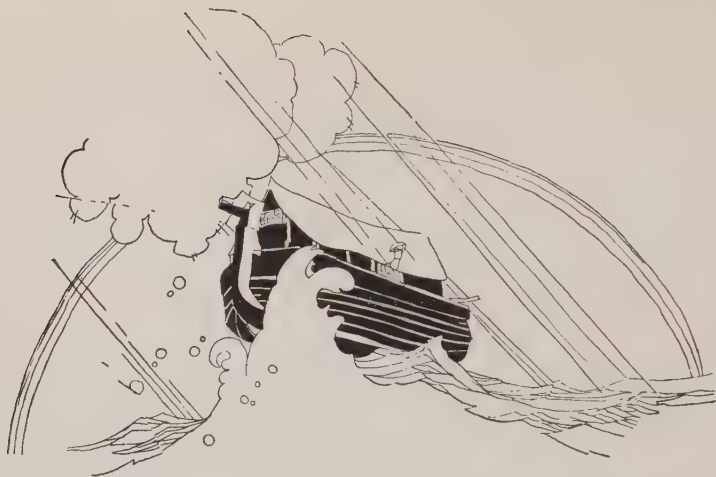
"But you do know all about ships, don't you?" asked Bobby.

Great Grandfather took off his glasses and his blue eyes took on a dreamy look as though he looked into the far away. Sister Sue settled down to listen and Bobby whittled very quietly on the block of wood that was soon to be a boat. For whenever Great Grandfather took on that far away look the children knew he had something interesting to tell them.

"I suppose that the first ship, that any of us have heard about, was Noah's Ark," he said.

"Noah's Ark!" exclaimed both of the children.

"Why, yes," answered Great Grandfather in mild surprise. "Of course, you've heard of Noah's Ark in your Sunday School lessons."



“Yes, I’ve heard of the Ark, but I never thought about its being the first ship,” said Bobby.

“Perhaps it isn’t the kind of ship that you mean, Bobby. Of course, the Ark was only a great barn on top of a spoon shaped hull. And it didn’t sail. It only floated around here and there wherever the wind carried it. To me it is very interesting, but I think Bobby would rather hear about the ‘Fram’, ” said Great Grandfather.

“The ‘Fram!’” cried Sister Sue. “I never heard of it. Did I, Bobby?”

“I know I never did,” said Bobby.

“Then you’ll like to hear about this famous ship,” said Great Grandfather.

“Yes, tell us about the ‘Fram’, ” said Sister Sue.

“The ‘Fram’ was a sturdy boat in which many people had sailed in the Arctic Sea and so, when the Norseman—”

“The Norseman!” exclaimed Bobby. “Is this a story of long ago?”

“No,” and Great Grandfather’s blue eyes twinkled

merrily. "I knew you would think that. This is a story that begins—Not so long ago."

"Great!" said Bobby.

"The Norseman was Captain Roald Amundsen. He had always wanted to find the North Pole and to be a great Arctic explorer. And so he is, for Roald Amundsen is the man who found the Northwest Passage from Scandinavia around the Arctic Sea and through the Bering Strait and so down into the Pacific Ocean. But I am not going to tell you about that. I am going to tell about the 'Fram'."

"After Roald Amundsen had found the Northwest Passage, he decided to try for the North Pole and he began to get the 'Fram' ready for a long hard trip. His plan was to sail southward around the Cape Horn and then northward through the Bering Strait into the Arctic Ocean.

"But, just as the 'Fram' was ready to sail, a thrill ran over the whole world, for Admiral Peary had planted the Stars and Stripes at the North Pole!

"It was a blow to Captain Amundsen, as he had always wished to discover the North Pole himself. Nevertheless, after making a few hurried changes in his cargo, he sailed out of the harbor in Norway. And it was not until they reached the Madeira Islands that Captain Amundsen told his men that the 'Fram' was on her way to the South Pole!

"The men were delighted, for they too, had been disappointed when they knew that they were not to be first at the North Pole.

"The name 'Fram' means 'Onward'. That was a very wonderful name for a ship bound for the South Pole," said Great Grandfather.

"I should say it was," said Bobby.

"The 'Fram' was laden down with cargo," went on Great Grandfather. "There were musical instruments, a piano, a flute and a talking machine, and games of all kinds to amuse

the men and keep them happy. There were sledges and a canary bird, and cats and chickens, and even pigs and sheep. There were, also, about one hundred husky Alaskan dogs that were to draw the great sledges over the frozen snow in the final dash for the pole. They lived on a special platform built about three inches above the regular deck. The raised platform was a splendid idea, for when the heavy seas dashed against the deep laden 'Fram', the dogs did not have to lie on damp beds, and as they drew near the equator an awning protected them from the scorching sun."

"Goodness, Great Grandfather, it must have been a great big ship!" exclaimed Sister Sue.

"No, child," said Great Grandfather, "the 'Fram' wasn't large, but every tiny bit of space was filled with packing boxes and supplies and the packing had been well planned. I believe I did not tell you that there was also a house on board."



"Wow!" exclaimed Bobby. "Where did they put it?"

"Well, I neglected to say that the house was in pieces and piled neatly! It was summer when the 'Fram' reached the Antarctic Ocean, though it was winter in the North. But though it was summer, all the land was covered with a sheet of ice and snow. And it was cold! The winds were strong and biting and colder on the land than on the ice.

"Onward sailed the 'Fram'. And about New Years Day a great iceberg came in sight."

"Oh," shivered Sister Sue.

"But that iceberg was not like the ones which Captain Amundsen had seen floating in the northern waters. They had been tall and sharp pointed at the top, and this one was broad and flat like a great floating ice plateau.

"Slowly the 'Fram' sailed on, true to her name Onward, between great floating masses of ice that almost seemed as though they would crush the gallant little ship, on—on—on—until she came once more to the open sea. Then she began to toss and roll again, but there were no icebergs in that sea and the men were relieved and glad.

"This sea was named the Ross Sea for a brave man who had discovered it years before. It took about four days to cross that sea and then they came to a great wall of ice, called the Ross Barrier; solid ice that stretched away to right and left for five hundred miles. But though the Barrier looked solid, Captain Amundsen was sure there was an opening nearby. Along the Barrier crept the 'Fram,' searching.

"After a rime they found the passage, but it was filled with floating ice, so that the 'Fram' had to stand by until some of it had floated away, out to sea.

"The 'Fram' sailed into the Bay of Whales and the explorers looked around for a good place to land.

"Then the dogs were let out."



Bobby laid down his tools and listened intently. This was the kind of a story that he liked best of all.

"The house was put up and cellars were dug in which to keep the provisions and coal and wood," said Great Grandfather. "And kennels were made for the dogs who did not mind the ice and snow."

"Did they really have to carry their wood and coal?" asked Bobby.

"Yes, for there were no trees or shrubs nor even drift-wood in that great barren land. And there were no Eskimos. The only living creatures those brave men saw were some strange birds called penguins and some seals.

"Soon, ice began to form, it grew much colder, and the 'Fram' sailed away, for the long Antarctic night had come and the 'Fram' might be caught in the ice. During the long night the explorers were very busy. They made their shoes larger so that they could wear more stockings and they made their sledges lighter. They made goggles because the blinding snow would be very hard on the eyes. Then, too, going out over the trail they were to follow later, Captain Amundsen and his men made stations along the way, leaving tents and food and clothing at each depot, and marking each mound with several flags.

"As soon as spring came, Captain Amundsen and his comrades started. Sometimes they went straight ahead, sometimes they had to go around and sometimes they climbed icy mountains. Winds blew and fogs surrounded them.

"Then, at last, Captain Amundsen's instruments told him that he had reached the South Pole. And when he and his men planted the Norwegian flag, for his own country, Roald Amundsen was very happy.

"The way back was not as difficult and soon they joined

their comrades at 'Framheim,' as they called their house, and had griddle cakes and coffee for supper.

"Not long afterward, the 'Fram' came sailing into the bay and carried them all home to Norway. The 'Fram' was decorated with flags and Captain Amundsen and his band received a royal welcome from the great crowds that gathered to see the gallant ship and the brave explorers."

"That's great!" said Bobby when Great Grandfather finished. "I always did like stories of adventure."



PENGUINS

“WHAT were the queer birds that Captain Amundsen saw in that land around the South Pole?” asked Bobby after a few minutes, during which he had whittled vigorously on his boat.

“They were penguins,” answered Great Grandfather. “And to my way of thinking they are mighty interesting birds.”

“I don’t think I ever saw one,” said Bobby.

“I don’t think I did, either,” said Sister Sue.

“Well,” said Great Grandfather, “I’m not surprised, for penguins only live in the Antarctic regions.”

“Aren’t there any up here at all?” asked Bobby. “Aren’t there any in the Arctic Ocean?”

“None at all,” answered Great Grandfather. “And one always thinks of a bird as flying. But penguins never fly.”

“They don’t!” exclaimed Bobby. “Who ever thought of a bird who couldn’t fly!” Even turkeys and chickens flew if they were in a hurry. This was a new idea.

“No sir,” said Great Grandfather, “penguins never fly, but they can swim like porpoises.”

“So can ducks,” said Bobby.

“Oh, ducks just sail along on the water,” said Sister Sue.

“Penguins have wings that are just like the flippers of a seal or a turtle,” went on Great Grandfather, “and when they swim they lie forward in the water and use their wings or flippers to push themselves along. And they steer with their feet, using them as though they were rudders.”

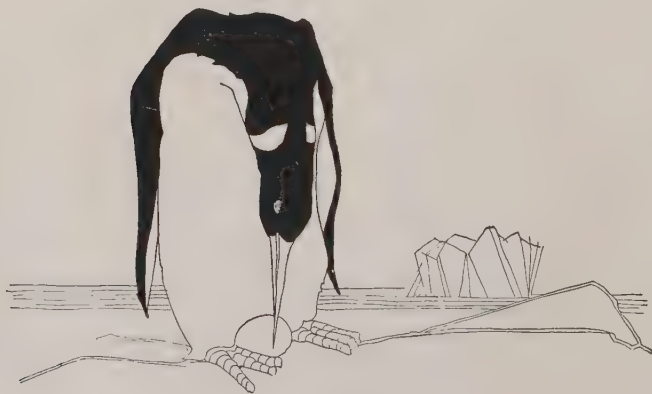
“Oh, how perfectly screaming,” laughed Sister Sue. “Do they have feathers like other birds?”

“Yes,” answered Great Grandfather, “but their feathers are shaped like scales of a fish. When penguins are in the sea, swimming, they are very graceful. But when they begin to come out of the water they are very awkward, for the surf rolls them around and pushes them down several times before they finally reach the shore.

“Their back and wings are a bluish dark gray, their breasts are snow white, and around their necks is a collar of golden color. When they reach the shore they waddle along like fat men in dress suits.

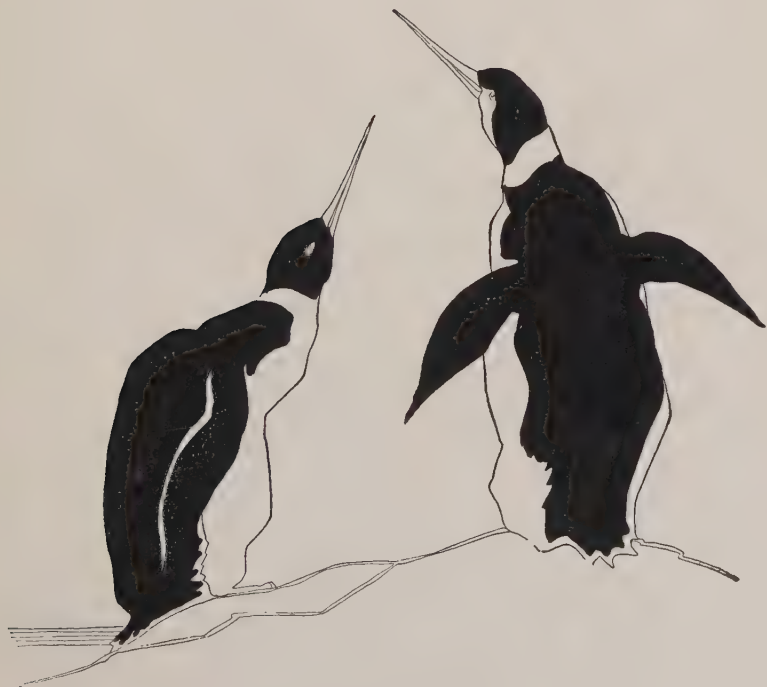
“They build their nests, which are only piles of little stones, on the cliffs, in villages, for the penguins are very fond of company and nearly always travel in crowds. And there are robbers among the penguins, just as there are among human beings, but the penguin who is being robbed never seems to know that some one is taking his stones or his food, for penguins are all very short sighted.

“Once, Mr. Shackleton, another Antarctic explorer, watched a penguin building a nest. The bird had to go quite a distance to find the small stones. But he was very patient and carried them back, one by one. He had been working



for some time and somehow his pile of stones never seemed to grow larger. Once or twice he leaned over and examined them but, as he couldn't understand why the pile did not grow, he waddled away for more stones. Still the pile was the same size. Then he seemed to pause and wonder. And just then the robber came waddling along and was about to help himself to another stone when the nest builder chanced to look around. Quick as a wink, the robber began to roll a pebble over and tried to make believe that he was only playing. He was so ashamed that he sneaked quietly away, to rob some other nest."

"And what did the nest builder do?" asked Sister Sue.



"He never seemed to know that he had been robbed," said Great Grandfather. "Just went on carrying stones."

"Are they sort of stupid?" asked Bobby.

"Not the least bit," answered Great Grandfather. "These birds are very bright. And they act very much like inquisitive children. Whenever a hole was chopped in the ice by the explorers, the penguins gathered about it and every so often they walked over and peeped into it."

"Weren't they afraid of the dogs?" asked Sister Sue.

"No, they liked to watch the dogs, too. When the explorers first arrived and the penguins came to see them, one of them spied the kennels. Soon he waddled over to the opening and peeped in. When the dogs barked he paid no attention. Not long afterward he waddled over to some of the other penguins and led them to the kennels, where they all stood in a row and watched the dogs. Then one day a dog chased a penguin. What do you suppose happened?"

"The penguin waddled away?" said Sister Sue.

"No, sree, that penguin turned around and gave the dog such a beating with his wings and such dagger like punches with his sharp bill that the dog was glad to get away.

"But though they can find the same path down to the shore where they get their food, which is a sea creature or fish, and can find their own nests again, if one of their children strayed out of the nest the penguin could not find it.

"Even if he did chance to meet the child, the parent would not recognize it, for on the land he does not see well at all. Or at least that's the way it seems."

"How dreadful not to know their own children!" exclaimed Sister Sue.

"Yes, and the penguins do something else that is very queer," continued Great Grandfather. "They bow when they meet. Just think how funny a crowd of penguins look bowing, like a lot of fat men in dress suits at a banquet!"

And Great Grandfather laughed with Sister Sue and Bobby.

"Do they really bow?" asked Sister Sue.

"Yes, really," Great Grandfather assured her. "They bow very low and politely and sometimes even throw their flippers around one another."

"That's the funniest yet," said Bobby. "I wonder—."

"What is it that you wonder, Bobby?" asked Sister Sue.

"I wonder how the penguins ever happened to know how to bow when they meet. And now I wonder how we happen to bow when we meet and how we happen to tip our hats."





TIPPING THE HAT

“OH, as to tipping the hat,” said Great Grandfather, “that began
‘In Days of Old, when Knights were Bold
And Barons held their Sway’.”

Great Grandfather smiled with the children at the quotation. “And that was years and years ago, when no self-respecting knight ever stirred out of his own home without his armor.”

“But why did they wear armor every time they went out?” asked Sister Sue.

“ ‘Cause it was being done!” said Bobby.

“Why?” asked Sister Sue again.

“So they’d be all ready to fight!” cried Bobby springing up on the window seat and waving his whittling knife above his head. “Avaunt, villian,” he cried again and sprang toward Sister Sue, who fell back with a little cry.

“Well, what was the armor, anyway?” Sister Sue wanted to know.

“Armor has been worn since the Norsemen in their high prowed ships started out from the firths, or narrow bays and waterways of Norway, in search of adventure and conquests. Their shields were made of a round disk of wood covered with leather. Sometimes nails were pounded into the shield to make it even stronger. And then in the days of the Crusaders—”

“Oh,” interrupted Bobby, “who were the Crusaders?”

“The Crusaders,” went on Great Grandfather, “were Christians who had promised to give their lives, if necessary, to win back the Holy Land from the Infidels, as the Moham-medans who were occupying Jerusalem, were called.

"The Crusaders had great banners with the Cross of St. George painted on them. Their swords were long and heavy and a man had to be very strong to wield one. When these brave knights found that the Infidels used spears and bows and arrows they began to wear armor for protection. At first it was made of soft chains woven together and it covered their hands and arms and legs and even went over their heads.

"After a time armor was made heavier and was hinged in all of the joints. With this kind of armor knights wore a helmet that fitted down over their heads and rested on their shoulders. On the front of the helmet was a piece that covered their faces. It could be moved up and down and was called a visor. It also had a few open slits through which the man breathed and looked out."

"Like a cage," said Bobby.

"That's what it would feel like to me," admitted Great Grandfather. "Whenever a knight went out calling or attended a banquet, of course, he wore his armor but when he arrived his first act was to raise his visor, to show that he felt safe among them.

"And so the custom grew. When Knights met a Lady they always raised their visor while speaking to her and they also lifted it as they passed her.

"After a time the age of the Crusaders and chivalry passed away. The style of wearing their armor all the time also passed, until in the days of Queen Elizabeth, armor was worn only in battle.

"Years have passed, and Knights are no more, children; still, in spite of the fact that armor is out of date, the courtesies that were practiced in that wonderful age of chivalry have been handed down to us.

"Is that the way it started!" exclaimed Bobby. "Well, hereafter I'll never forget to do it. And each time I'll think I'm a Knight in armor raising my visor."

ABOUT THIMBLES

SISTER SUE was very much distressed. The sewing teacher in school had said that very day that Sister Sue would never learn to sew because she didn't use her thimble.

"What's the trouble with my Sister Sue?" asked Great Grandfather, coming in and finding her a wee bit weepy.

"Teacher says that I simply must use a thimble, but I can't seem to keep it on. It really wants to go on my thumb," and Sister Sue tried to smile up at Great Grandfather.

"Oh, see this poor finger!" exclaimed Great Grandfather. "See how you have treated it! Pushed it against the needle so hard that it's all pricked. Cover it up with the thimble. And don't wear your thimble on your thumb for no one does that now, only sailors. And you aren't planning to be one, are you?" he asked.

"No," admitted Sister Sue.

"And you don't want to start a new style do you? Because for centuries and centuries women have worn thimbles and as far back as we know they have worn them on the middle finger. Of course, I can't say whether the Egyptians and the Romans wore theirs on their thumbs or not. But I do know that thimbles were worn by women in the early ages, for they have been found in Egypt and in the ruins of an old Roman town called Herculaneum. And so were needles. But theirs weren't sharp and slim and bright like yours; they were made of bone and bronze. We would think they were very clumsy."

Sister Sue took up the coarse cotton bag on which she was supposed to work. The thimble on her middle finger pressed the sharp needle which slipped into the goods, draw-

ing the long thread after it, like a kite darting through a cloud with the long tail following.

"It's much easier. I mean, it will be much easier when I get used to it," said Sister Sue.

"The longer you sew the better you'll like it," said Great Grandfather. "Women everywhere wear thimbles. One can tell that by the thousands that are turned out every





day. Most of the thimbles are made of silver coins, melted up and rolled out in a sheet, just like a sheet of cookie dough."

"Oh, Great Grandfather, are they cut out like cookies, too?" asked Sister Sue, much interested, for if there was anything Sister Sue liked to do it was to cut out cookies.

"Just like cookies," agreed Great Grandfather. "But thimbles are cut by machinery and then pressed over a solid bar that pumps up and down until the thimbles are the right size and shape. One after the other the thimbles come out of the machines, so many and so fast one can scarcely believe it.

"But for all of the centuries before machinery was made to turn out thimbles, they had to be pounded out by hand, for ladies simply would have them. When Knights came in with their tales of adventure, the ladies would pick up their work and embroider while they listened. Sometimes a minstrel sang and played on his lute or cithara."

"Wait for me," came Bobby's voice from the hall. "Wait until I hang up my jacket."

"Hurry," called Sister Sue. "Great Grandfather is going to tell us about a lute and a cithara, whatever they are."

"The lute is a musical instrument. It has been played for centuries and looks something like our mandolin." Great Grandfather paused as Bobby came bounding into the room and threw his books on the window seat.

"What did I hear you say about a cithara?" he asked.

PIANOS

“THE cithara,” began Great Grandfather, as soon as Bobby had taken up his boat and had begun to whittle, “is the musical instrument that finally turned into a piano.”

“That makes me think,” exclaimed Sister Sue, “I have a music lesson tomorrow. And I haven’t practiced!”

“Forget the lesson now,” said Bobby. “Great Grandfather is going to tell us about citharas and how they turned into pianos.”

“Well, in the days of long ago,” began Great Grandfather again, “minstrels traveled from country to country and from castle to castle carrying the news, for there were no papers, and of course there were no telephones nor cables nor wireless nor anything like that.

“And so, when word was received that a minstrel was without the castle walls, great joy reigned within, for the Knights and Ladies were delighted. They knew they would hear the news of the outside world and they longed to hear his music. Quickly, the lord of the castle sent a little page running down to the courtyard.

“‘Let down the drawbridge!’ cried the page. ‘Let down the drawbridge! A minstrel waits without and milord bids you welcome him in!’

“Then, as the little page stood on tip-toe and peeped over the shoulders of the guards, with a clattering and a clanking and creaking of chains, down fell the drawbridge. Above, from the turret windows and from the towers and parapets the Knights and Ladies watched while the soldiers greeted the minstrel and ushered him over the drawbridge and into the castle.

"After the minstrel had bathed and rested, a wondrous feast was set before him. The great banquet table groaned under the weight of good things to eat. There were sides of venison, roast pig and stuffed pheasant and geese, great puddings and apples stewed in syrup. And all through the feast there were jokes and laughter, but, when it was over and the company gathered together before the great fireplace, their voices were hushed as they waited.

"Then the minstrel began to sing." Great Grandfather began to whistle in two tones.

"I know what you're whistling," cried Sister Sue, her eyes like stars and her cheeks like roses, as she began to stroll across the room strumming on an imaginary mandolin and singing,

" 'A wand'ring Minstrel I
A thing of shreds and patches
Of ballads, songs, and snatches
And dreamy lullabys
And dreamy lullabys.' "

"I remember," said Bobby, "it's from the operetta the 'Mikado'. Mother took us to hear it last year."

"That's it," said Great Grandfather. "Sometimes the minstrel told of the wars in the Holy Land. Sometimes he told of lands far over the seas and sometimes he told of happenings in the nearest castle, miles and miles away. And, always, he told his news in song to the tinkling tune of his lute or cithara. Throughout the great hall, as he sang, there was never another sound, unless it might have been the sudden clank of armor as a Knight stirred, or a sigh of pity or delight from one of the Ladies as the tale progressed. Far into the night, the minstrel played, until the pine knots smouldered and died away leaving only the light from the logs.

"People were so fond of music that, after a time, a small

dulcimer was played by the Ladies themselves. They held small hammers in their hands and struck the strings, somewhat like our xylophone.

“Then, someone invented a key board. When the keys were touched by the fingers, hammers moved which struck the strings.

“King Henry, the eighth, and his two daughters, Mary who was queen for a short time and Elizabeth who later



became 'Good Queen Bess,' of England, were very good musicians and played well on the instrument with a key board, which was called a virginal.

. "Queen Bess owned a very beautiful virginal. It weighed only twenty-four pounds and could be easily carried around from one room to another. The case was of cedar covered with crimson Genoa velvet and lined inside with strong yellow silk. The front was entirely of gold.

"Often in the twilight of the long winter evenings Queen Bess played on her virginal. The jewels in her rings sparkled and glistened as her snow-white fingers slipped over the silver and gold-tipped ebony keys, while around about her stood an admiring circle of courtiers.

"About the same time a spinet was made. It had legs to stand on and its hammers were made of the spines of quills."

"What do you mean by spines of quills?" asked Sister Sue.

"I should think that any one would know the answer to that," said Bobby. "It's the part that grows up through the middle of a feather."

"Yes," said Great Grandfather, "and these hammers picked or struck the strings and gave a very pretty but not very loud sound.

"Later, about the year 1700, harpsichords became very fashionable. They were built like small grand pianos and were very much like spinets. But harpsichords sometimes had two key boards and where the spinet had only one string to a note, the harpsichord had three or four.

"Someday you may go to Washington and go to see George Washington's Home, Mount Vernon. And if you do, you'll see the harpsichord that George Washington gave his adopted daughter, Nellie Custis. While her stern grandmother, Martha Washington, sat knitting, Nellie was forced to practice long hours, sometimes four or five a day, on her harpsichord.

"But, although people enjoyed the harpsichord, they wanted something better. Then three men, working separately and each having no idea of what the others were doing, made a new instrument. And, because it could be played either piano or forte, they called it a pianoforte."

"Oh, I know that," said Sister Sue. "I learned that in my lesson. Piano means soft and forte means loud!" And Sister Sue looked quite pleased to think she remembered.

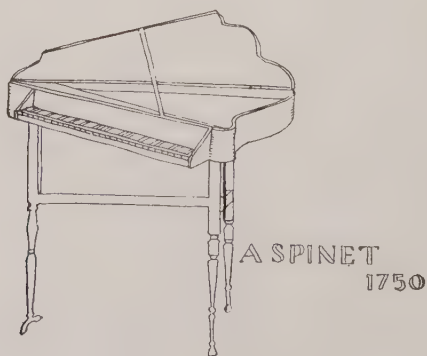
"Who were the men?" asked Bobby, who always wanted to know the names of men who had invented things.

"One was an Italian by the name of Bartholomeo Christophori," said Great Grandfather. "One was a Frenchman who was called Marius, and the third, a German, was Christopher Schroeter. But, since each of these three men made a pianoforte, at about the same time, no one knows which should have the credit for it."

"I think they all deserve it," said Sister Sue.

"I think so too," said Great Grandfather. "Then, as the years passed the name pianoforte was shortened to piano."

"But," Great Grandfather went on, "even though people began to play on the dulcimer, themselves, they still welcomed the minstrels because they carried the news."



NEWSPAPERS

"I WISH we could have minstrels now," said Sister Sue. She had quite forgotten that she thought she couldn't learn to sew and was making a very nice seam in the coarse bag. Sometimes the thimble had fallen off and lost itself among the shavings on the floor. But she had picked it up and started her sewing again, not even seeming to notice, for Great Grandfather's stories were extremely interesting.

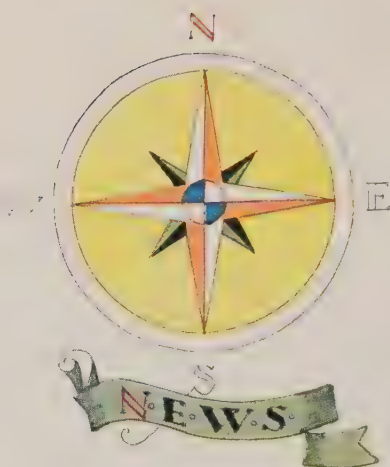
"It would be nice to see a minstrel," said Great Grandfather. "But since we have no castles and no drawbridges to let down, half of the fun would be gone. And beside that there are so many people that perhaps it is better that newspapers came into vogue."

"Whoever thought of having newspapers instead of minstrels?" asked Bobby.

"Centuries before anyone in Europe had learned to print, the Chinese in Asia had had newspapers. They had been making them from wood blocks. In Europe, the earliest newspapers were really manuscripts, that is, they were written by hand."

"Goodness, I'd hate to be the one to write all those manuscripts," said Bobby.

"You wouldn't mind if it were your business," said Great Grandfather. "But everyone did not have a newspaper. Only the wealthy could buy them. Nearly every town hired a man to go around and read the news to the people. He rang a bell and when a crowd collected around him, he read them the news. On the front page of the paper," and here Great Grandfather drew a piece of paper toward him and took out his pencil, "was drawn the four points of the compass, like this," and he drew the four points.



“Why was that?” asked Sister Sue.

“To show those who bought the paper, that the news was gathered from all over the world North, East, West and South. Finally, the writers of these papers began to write the letters along in a row, like this,—N. E. W. S. And so the word NEWS was made. See?”

“They coined a word,” said Bobby.

“Yes,” said Great Grandfather, “and the word became very popular. All over the world people began to use it. In England, a man called newsgather was hired by the wealthy to collect the news. One man whose name was Nathaniel Butters made what he called Newsletters.”

“Oh, how queer,” said Sister Sue.

“And then, in 1622, Mr. Butters began to use the printing press,” added Great Grandfather.

“Tell us about his printing press,” begged Bobby.

THE PRINTING PRESS

THE waffles and maple syrup had been eaten and the chicken had all disappeared. Great Grandfather and Bobby were busy sandpapering the hull of the little boat. When it was all smooth with no bumps on its surface, Bobby was going to paint it. Sister Sue hoped they would let her help, but Bobby told her she could paint a croquet post instead.

"Don't forget, Great Grandfather," said Sister Sue, "you said you'd tell us about the printing press. Are you too tired?" she asked.

"No," answered Great Grandfather, "and I really think Bobby can do his sandpapering alone much better than two of us working together.

"I imagine John Gutenberg looked very much as we do when we get through fussing with the boat."

"Is this a story about John Gutenberg?" asked Bobby.

"Yes, John Gutenberg made the first printing press. You see, he kept a jewelry store and in the back of his shop he had a little room. It seemed that he was always working in that back room.

"Sometimes a customer noticed that John had chips in his beard and on his clothes. For John Gutenberg was carving a picture."

"Carving or painting, Great Grandfather?" asked Sister Sue.

"He was carving it," answered Great Grandfather with a smile, "carving it on a block of wood. If we had been little mice and had peeped in at him, we would have noticed that he was very particular. We would have seen how sharply he

cut the edges. And then we would have seen him put the lamp black into his agate mortar and rub it around vigorously with his stone pestle until the black powder and the oil were mixed well together, and formed an ink."

"And then what did he do?" asked Bobby, resting a moment, for sandpapering was rather hard work.

"Then," continued the story teller, "John Gutenberg picked up a little soft feather ball and dipping it in the thick ink dobed it all over the face of the wooden block on which he had carved the picture. Next he dipped a clean sheet of paper in a bowl of water and laid it on the table. Quickly, then, he turned the wood block face down on the paper and pressed with all of his strength.

"Then, very carefully, he picked the block from the paper and gazed at it half fearfully. But he was not disappointed. There was the picture, clear, clean cut and beautiful.

"After that, he kept the door of the back room locked. For John Gutenberg knew he had discovered something marvelous and he was afraid to tell for fear he would be accused of being a wizard and using black magic.

"When the picture was quite dry, John sold it. After a little while he carved words in the wood underneath his pictures. But of course the letters had to be made backward, so that they would read correctly when they were printed.

"Then one day his knife slipped and cut one of the letters off from the block!"

"Oh, and after he had worked so long carving it!" exclaimed Sister Sue, sympathetically.

"Oh, I'll bet he wasn't the least bit discouraged!" said Bobby.

"No," said Great Grandfather, "it was the best thing that could have happened. For, as he picked it up, a brilliant thought came to him. Why not make all of the letters separate? He could move them around. After he discovered this

he carved many of each letter of the Alphabet. Soon he began to make a large book, and because he found it tiring to press down on so many pages, he made himself a press. When he turned the handle it pressed the paper and the letters close together. As you have perhaps guessed, that was the first printing press. And the Book he was printing was a Bible. The capital letters were printed and then colored with red and gold and blue."

"Of course, everyone thought he was a perfectly wonderful man, didn't they?" asked Sister Sue.

"No," said Great Grandfather, "even though people in all parts of town began to print as he did, he had difficulty in getting money enough to go on with his work. But he managed to get some and then he began to use metal type and leaflets appeared by the thousands.

"In 1462 the town of Mainz where Gutenberg lived was captured and the printers were scattered all over Germany. Soon many of them found their way to England.

"As the years passed different people have improved the printing press until now we have the wonderworking rotary press, which is run by electricity."

"I shall surely invent something like that when I grow up," said Bobby.

"How can you, if you go into the Navy?" asked Sister Sue.

"Well, I'll find something to do," said Bobby, as he put away his boat for the night and Sister Sue did her best to sweep up the floor, and Great Grandfather threw the shavings into the fire.



THE ERIE CANAL

"LOW bridge, everybody down,
Low bridge, we must be near the town.
Oh, you'll always know your neighbor,
You can always tell your pal,
If he's ever navigated on the Erie Canal,' "
sang Great Grandfather, to himself.

"What's that?" cried Bobby, coming into the room.

"What's what?" asked Great Grandfather in surprise. For Great Grandfather had been singing to himself and had not known that anyone was listening.

"That song about the Erie Canal," said Bobby.

"Oh, a song," said Sister Sue, tripping in just in time.

"I'm sorry," said Great Grandfather. "I know just one verse. The rest I forgot years ago. That's the way it used to be on the Erie Canal. When we came to a bridge some one would call out 'Low Bridge,' and every one had to duck."

"Why?" asked Bobby. He always wanted to know why.

"Well, you see, the bridges were very low," said Great Grandfather.

"It must have been funny to see all the people duck at once," said Sister Sue.

"Yes, it was funny and everyone did laugh," said Great Grandfather. "Once the Erie Canal was a great waterway running from Buffalo, on the eastern end of Lake Erie, to Albany on the Hudson River.

"Years before it was started Robert Fulton wrote to George Washington saying that a canal connecting Lake Erie and the Hudson River would be a marvelous way of promoting trade with the interior or the West.

“But as such a canal was a gigantic undertaking for those days, since there were no wonderful steam shovels such as we have now, Robert Fulton’s letter received very little attention. However, in 1818, Governor Clinton, of New York State, succeeded in persuading the state to build such a canal.

“For nearly eight years men worked digging the canal which was three hundred and sixty-three miles long and forty feet wide but which at first was only four feet deep. After a while, when the canal became very popular and the boats were heavy laden, down to the water mark, it was made seven feet deep. But that was as deep as it needed to be, for the canal boats were low flat-bottomed ones, shaped something like the Ark.

“Horses or mules, walking along a narrow towpath on the bank of the canal and hitched to the canal boats by tow-ropes, drew the boats along.

“All through the eight long years, while the canal was being built, everyone laughed at Governor Clinton and his ‘Ditch,’ as they called the canal.

“But he did not care, since he was sure that the canal would be a wonderful thing for the central New York towns. Even though ‘Clinton’s Ditch’ cost seven million dollars and New York state had to pay for it, he was not worried, for he knew it would be worth all it had cost.

“At last the Erie Canal was ready for navigation. Governor Clinton and some friends went to Buffalo to make the first trip on the canal. The boat was called the ‘Seneca Chief’ and was drawn by four gray horses.

“All along the way, as the ‘Seneca Chief’ reached the little towns, bells rang out and cannons boomed, men doffed their high beaver hats and women waved their lacy parasols.

“There was plenty of time to exchange greetings with friends along the banks, for the boat only traveled about two miles an hour.”

"Didn't exceed the speed limit, did it?" asked Bobby.

"Maybe it wasn't fast, but it was swift for those days. That was before we had trains, you know. The speed limit was four miles an hour, for the authorities were fearful that any more speed would cause the rush of the water to wash away the banks."

"People must have had to sleep on the canal boat," said Bobby.

"They did," said Great Grandfather. "There were bunks in the cabin which were pulled out at night and put away in the daytime when tables were set up and the cabin was used as a dining room.

"On that first trip, Governor Clinton had with him some eagles and a couple of Indians and a keg of water from Lake Erie. When he reached New York great crowds were awaiting him. For every five miles along the way cannons had been fired as the 'Seneca Chief' passed them and in this telegraphic-cannon way all New York knew of his coming.

"Then, as the 'Seneca Chief' reached New York Harbor, Governor Clinton poured the water from the keg into the Bay to show that a great waterway joined Lake Erie and the Atlantic Ocean and the interior with New York City. And instead of laughter and mockery Governor Clinton was praised on every side.

"I'd like to take a ride on the canal," said Sister Sue.

"So would I," said Bobby.

"That can't be now, children," said Great Grandfather. "Part of the canal has been made into a great ship canal. And some of the old Erie has been filled in and is now a highway. But for nearly one hundred years, the Erie Canal was a useful waterway and in the days when it was young it was the greatest improvement of the time.

"Let's sing the song," said Sister Sue. "How does it go?"

And so Great Grandfather sang again,
“ ‘Low bridge, everybody down,
Low bridge, we must be near the town.
Oh, you’ll always know your neighbor,
You can always tell your pal,
If he’s ever navigated on the Erie Canal.’ ”



The FIRST SUNDAY SCHOOL

IT was Sunday morning. The sun room did not look as it did on other days, for the shavings and the curlings were all swept up and the tools put in the chest. On the table sat the boat in sparkling though rather wet splendor, for its new coat of paint was drying.

Bobby was arranging the stamps in his album and Great Grandfather was reading. The whole room had an air of quiet peacefulness.

Soon Sister Sue came to the door and peeked in.

"I mustn't come in," she said, "because I am all ready for Sunday School, and Delia says I have to be perfectly quiet so I won't muss my dress."

"Don't you think you could be quiet in here?" asked Great Grandfather, smiling at Sister Sue, who looked like a pink rose in her new dress.

"Delia says she wants to keep her eye on me," said Sister Sue. "Come, Great Grandfather, let's ask her if we may go for a walk around the block. She'll let me go if you ask her."

"Suppose you come in and sit down with us now, and this afternoon we'll take a walk," said Great Grandfather.

Sunday was a lonely day for Sister Sue and Bobby. Their mother and father were on the high seas on their way to England and it seemed that on Sundays the children missed them more than ever.

"Sit down, Sister Sue, and I'll tell you and Bobby about the first Sunday School."

"Oh, goody," cried Sister Sue. "I'll tell Delia that I'm going to sit perfectly still," as she flew down the hall. Soon she came back.

"I may sit and listen, if Bobby and I don't fool. Delia

says she has other things, beside buttoning me up, to keep her busy," she said, sitting down very carefully and spreading her dress out around her.

"Now this is a story of long ago," began Great Grandfather. "It's a story of the year 1812."

"Is it about the war of 1812?" asked Bobby.

"No, Bobby, this is a story of 1812, in England. It was a beautiful Sunday morning, just like this, only a wee bit warmer. And it happened in Gloucester, in England.



"As I said, it was a beautiful Sunday morning, and down the flag walk that led from a little brown peaked-roof cottage, a man was walking. He was dressed in his very best; and as he walked between the rows of primroses, he smelled their fragrance and leaning over plucked one and pinned it on his coat. Then, swinging his cane he walked on, leisurely, to the Inn.

"When he reached the Inn, he seated himself in the fragrant garden and prepared to watch some birds who were building a nest, above, in the apple tree. But he didn't enjoy himself long."

"What happened?" asked Bobby.

"What would you say if a crowd of boys came yelling down the street this beautiful day?" asked Great Grandfather.

"I'd say they were a bunch of hoodlums," said Bobby.

"That's what Robert Raikes thought," said Great Grandfather. "For you see, Robert Raikes was a publisher and worked hard all week in his printing shop, and Sunday was his only day of rest.

"And he had hoped to sit down among the pinks and watch the birds, and drink in the peace of the day. But as he sat there a crowd of boys came running and yelling down the street. The quiet and peace of the Day of Rest was ruined.

" 'If this keeps on,' he said to himself, 'these boys will be ruffians all their lives!'

"Then he picked up his cane and stepped into the midst of the crowd. For a moment the boys were hushed in surprise, but soon they went on pushing and hauling each other about and yelling as before.

" 'Boys,' said Robert Raikes in a very firm though quiet voice, 'I think I know of something that may interest you.' Then he led the way down the little street. The boys followed along behind him, yelling and pushing. But Robert Raikes paid no heed. Straight down the street he went, while men

looked at him in astonishment and women and children, ready for church, peeked at him from behind the fences and over the gates.

"In through his own gate and up through the primrose-lined walk he led them. The boys were growing more subdued, for they had no idea what Robert Raikes intended to do. Some of them were on the point of running off if he so





much as lifted the hand with the cane in it, while others were more willing to brazen it out."

"What was he going to do?" asked Bobby.

"Wait and see, Bobby, I'm sure you'll say that Robert Raikes had a wonderful idea. As the boys reached the house," went on Great Grandfather, "Robert Raikes opened his front door and ushered them into his cool living room, which was smelling all of lavender and filled with all sorts of curious things, from India and other places. The boys began to grow more at ease. Soon they lowered their voices and became quite natural.

" 'I am going to start a Sunday School for you, boys,' he said. 'It will be a free school and no one will have to pay. And I will be your teacher!'

"The boys had never heard of a free school, for in those days nearly every child had to pay to go to school. And so his news was received with joy by the boys! They began to like Robert Raikes and they liked to listen to him.

" 'Remember, boys,' he said as the boys were leaving, 'I shall expect you all next Sunday at the same time.' "

"Why didn't they go to church?" asked Sister Sue.

"Those boys were too grimy and dirty and noisy to be allowed in the churches of those days," said Great Grandfather. "And there was no other place for them but the streets.

"The next Sunday morning Robert Raikes was out in his dooryard, bright and early. He wondered if the boys would come, and, if they should, how many."

"And, did they come?" asked Bobby.

"Indeed they did," said Great Grandfather, "many came and brought their friends, so that the long living-room was filled with boys eager to learn the story of the Bible.

"People of Gloucester began to hear about the new Sunday School, as they called it, and all said it was a wonderful idea.

Its fame began to spread all through England. Then in Australia and Germany and France people heard of this way of saving homeless waifs and boys whose mothers and fathers paid no heed to them, from a life of ignorance and wickedness. And they, too, took up the idea.

"Soon it spread to the United States and Canada and before many years every Christian country in the whole world had Sunday Schools.

"But, Great Grandfather, you said that Sunday Schools were for boys. Where do I come in?" asked Sister Sue.

"After a while Sunday Schools became so popular that all children, boys and girls, went to learn the story of the Bible and the history of the Church," said Great Grandfather, and he rose from his chair, for the church bells were ringing.

"Come to Church," they chimed. "Come to Church come to Church, come—to—Church!"



THE LIGHTHOUSE

A PENNY for your thoughts, Sister Sue," said Great Grandfather that evening, for Sister Sue's thoughts seemed to be far away.

"Oh, I was thinking of Mother and Daddy," said Sister Sue.

"They are very nearly across the Atlantic, now," said Great Grandfather.

"Maybe they can even see a lighthouse in England now," said Bobby.

"Oh, Bobby, do you remember, when we were in Provincetown, how we went up into Auntie's Studio and looked out over the bay?" asked Sister Sue.

"Yes, and we were on such a high hill, or hummock as Auntie called it, that we could see for miles. Why, Great Grandfather, we could see the moors behind us and on clear days we could look out over the moors that were all covered with blueberries and little pine trees, and see the ocean," said Bobby.

"And then in the evening," Sister Sue added, "after we had been gathering shells and swimming and watching the artists on the shore and having a wonderful time all day, we would go up into the studio and watch for Highland Light to flash." Sister Sue paused to catch her breath, for she was getting very much excited and had forgotten that she had been a wee bit lonely just a short time before.

"Yes," Bobby took up the tale, "and one day Daddy took us up in Highland Lighthouse. And Sister Sue, do you remember how we had to wait outside for the keeper of the light to take us up? And then we climbed and climbed, Great Grandfather, and the steps wound around and around

the great pole that went from the bottom to the top of the light-house."

"And Mother grabbed the rail and said, 'OOooh, I'm dizzy!' and Daddy said, 'Well, hang on, for you can't go back now,' " said Sister Sue.

"No," said Bobby, "for there wasn't room to pass on the stairway. And then we reached the light! And, Great Grandfather, it was just a little lamp. But because it had such a wonderful big reflector, like a great glass shade that set down over that little lamp and magnified it so, it could be seen for miles."

"Which makes me think of Shakespeare," said Great Grandfather.

"How?" asked Sister Sue.

"Oh, a line of his—'How far that little candle throws his beams! So shines a good deed in a naughty world,' " he quoted.

"Oh, that was just like the light. It was so tiny and it shone so far, Great Grandfather," said Sister Sue.

"The keeper said the way the great reflector was cut and made, made the light so bright. It was cut like prisms on a lamp. I looked through and I could see all the colors of the rainbow.

"The prism glass was cut in different ways and put together with metal," broke in Bobby. "It costs thousands for one reflector. There were four round places in the sides of the reflector and, as it turned around, every time the round spot came opposite the lamp, it flashed," said Bobby.

"The keeper said it could be seen for at least fifteen miles," said Sister Sue.

"That's the way countries protect their seamen," said Great Grandfather. "Even the Egyptians had lighthouses. One king built a great white marble building on an island called Pharos. This great and gorgeous building was so

magnificent that it is called one of the Seven Wonders of the World.

"On the top of this building, four hundred feet high, burned a light, always, day and night."

"And is the light there now?" asked Bobby.

"No, that light was destroyed by an earthquake," said Great Grandfather. "But it does show that countries have always tried to guard their sailors and guide them home safely. Uncle Sam has other ways of guiding his seamen, for, where the shore is rough and rocky and where great sandy shoals rise, far away from land, Uncle Sam places lightships and buoys."

"I'd like to be a keeper of a light," said Sister Sue.

"You couldn't be a keeper of a light," said Bobby, "for you're only a girl. Who ever heard of a girl keeper of a light!"

"Oh yes, Bobby," said Great Grandfather, "many brave girls have tended the lights. One of these girls was named Ida Lewis. Her father was the keeper of the light on Lime Rock near Newport, Rhode Island. Every day she was out in her little row boat or dory, going from the island to the mainland and back again, until she knew the channel better than the seamen. Sometimes, in a storm, Ida Lewis would row up to some schooner in distress and lead it into the right path.

"And so, sailors began to watch for her and she was known all along the coast as the Girl from Lime Rock.

"Follow the Girl from Lime Rock," they would say. "She'll help you out."

"Every day, from the time she was quite small, Ida Lewis climbed the long flight of stairs that led to the light and helped her father fill the lamp. Then, when she was eighteen years old and her father was no longer able to climb the stairs, Congress appointed her keeper of the light.

"Many, many times when storms were raging and waves

were dashing over the rocks, this brave girl sprang into her dory and rowed out over the tossing seas to save some poor mariner who was in trouble.

"No matter what the weather, no matter how the winds blew or the waves piled high, Lime Rock Light was always burning, gleaming out over the sea to save some sailor's life! You see now, Bobby, girls too, are brave and have kept lights burning."

"Well, I never knew there ever was such a girl," said Bobby.

"Yes, and there have been a great many other girls, too," said Great Grandfather, "who have been as brave as Ida Lewis, but we just haven't heard of them."

"They are the Unknown Heroines, aren't they?" asked Sister Sue.

ABOUT BLOTTERS

“STEVE is going to pass out blotters tomorrow and I am going to help him,” said Bobby one evening.

“Pass out blotters!” exclaimed Sister Sue.

“Yes, the new drug store around the corner is going to open Saturday. And they’re going to send boys out with blotters telling about it. And we’re going to ring the door bell and when we hear someone coming we’re going to drop the blotter on the porch and run. And that’s not all. The new drugstore man is going to give us each a quarter,” said Bobby.

“What’s on the blotter?” asked Sister Sue.

“Oh, just printing. Name of the store and invite to come,” answered Bobby. “And they’re good blotters, too,” he added.

“What color?” asked Sister Sue.

“Oh, pink, I guess, maybe,” said Bobby. “And you should see them soak up the ink! Steve and I tried them. Steve said he wouldn’t go around peddling no-good blotters for even a quarter and so we tried them on the sidewalk. I poured the ink out of my pen and they soaked up fine.”

“That’s why they are called blotters,” said Great Grandfather, “because they absorb. The man who discovered that was a lucky man. And it was all pure luck, at that.”

“How was that?” asked Bobby.

“One day, soon after the year 1800, a workman in a paper mill in Berkshire, England, was dreaming and forgot to put the sizing in the paper. Of course you know that paper is made from old rags,” said Great Grandfather.

“Rags!” exclaimed Bobby and Sister Sue together.

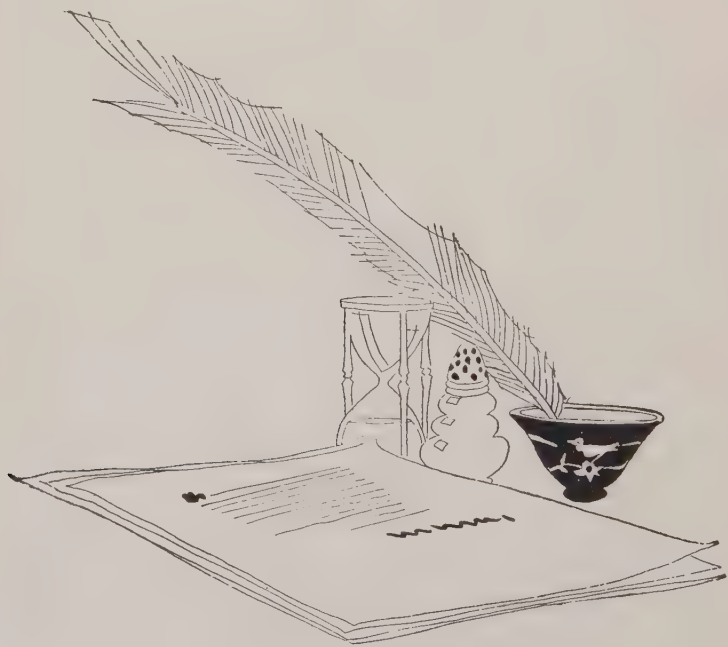
“Yes, most paper is made from old rags churned over and

over until they simply fall to pieces and then, after it has been through several different sieves, it is rolled out smooth over ever so many rollers. When it comes out it passes over a roller that puts on the sizing.

“Well, it was this sizing that the workman forgot to put in and so, when the paper came out, it seemed to be ruined.

“When the owner of the mill came back and saw the ‘ruined’ paper, he was much upset. He fumed and scolded and stormed around for a time. But, finally, he sat down to do some figuring. As he still held a piece of the ‘ruined’ paper in his hand, he began to figure on that.

“At first, because he thought the quill pen was getting old and rather fuzzy, he thrust it back into the holder and chose another. He was so annoyed that he thrust it deep into the ink pot.



"When he tried to figure, a large blot fell off the end of his quill. It spread and spread on the 'ruined' paper. The man watched with fascinated eyes as the ink spread into a large round spot.

"Then he tore a little corner off from the paper, dipped it into the ink pot, and watched the ink creep up into it.

"He wrote a few words on a fresh sheet of paper and laid the 'ruined' paper on the wet ink. When he raised it up the ink still showed on the writing, but some of it had soaked into the 'ruined' paper.

"Up to that time everybody had used sand to dry their ink. They kept the sand in a shaker like a salt shaker."

"I know," said Bobby, "like the one Mother bought at the antique shop, in Provincetown."

"The same kind," continued Great Grandfather. "Well, the owner of the mill took all of his old red rags and put them into the vat. Then he and the workman began to churn them around and around until they came out nice pink blotting paper."

"Why did they take all the red rags?" asked Sister Sue.

"Because the red rags would never bleach out into pure white for writing paper," said Great Grandfather. "The owner called it blotting paper and sold all of his stock."

"Somehow, I don't like to think that paper is made from rags," said Sister Sue.

"Not all is," said Great Grandfather. "During the Civil War, when it was very hard to get rags, for most of them came from abroad, people learned to make paper from pulp. Yet the best paper is still made from rags. But you need not feel queer about the rags, for they are washed and sterilized before they are ever put into the vat to be made into paper."

"I'll have to tell Steve all about blotters. It will be much more interesting to peddle them now that we know how they are made. And I'll say—Here's a piece of paper which you

may think is ruined. But it's worth more than you know. Follow directions and see," said Bobby, and laughed.

"Are there directions on the blotters?" asked Sister Sue.

"No, Sister," said Bobby. "I'm only fooling."

Just then the telephone bell rang. Sister Sue ran to answer.

"Hello," she called.

"Hello," some man's voice answered. "I have a cablegram for you."

"Wait a moment," cried Sister Sue. "Oh, Great Grandfather, someone says he has something for us. Will you come and see what it is?"

Great Grandfather hurried to the phone. "Yes," he said, "Yes, yes, yes, thank you."

"Goodness," said Bobby, "what did he say he had?"

"He said he had a cablegram from your Mother and Daddy. They said, 'Arrived safely. Both well,' " said Great Grandfather.

"Is that all they said?" asked Sister Sue, much disappointed.

"Why, yes," said Great Grandfather.

"Didn't Daddy ask to talk to me?" asked Sister Sue, bursting into tears. "I wanted to talk to him."

"Oh, Sister," said Bobby sympathetically, as he patted her shoulder and tried to soothe her, for, though Bobby teased his small sister, he was very fond of her.

"There, there, now," said Great Grandfather. "I don't believe you understand. I didn't talk to your father. It was like a telegram, and was delivered over the telephone."

Sister Sue began to dry her eyes and to smile as usual.

"Come, dear," said Great Grandfather, "I'll tell you all about this wonderful cable."

THE ATLANTIC CABLE

AFTER the telegraph was invented it was so popular that men began to wonder what else might be done with it. They began to wonder how far one of those messages would travel. And they began to think it would be wonderful to send messages to England.

“Then, one day, Cyrus Field heard that soundings had been taken of the Atlantic Ocean bottom and that along a certain route, the ocean bed was almost level.



“Very soon, he and some of his friends met and spread maps and charts all out on a table and decided to put a line of telegraph from the mainland to New Foundland.

“After this was done and was successful it showed that a telegraph message could travel as well under the water as on the land.

“Soon afterward Mr. Field and Mr. Morse who had invented the telegraph, went to England to tell them over there all about the undersea cable. Then Great Britain and the United States decided to lay a great cable from the coast of Ireland to America.

“So, two ships set out with great rolls of cable. The cable was fastened to the shore and the American ship began to sail, and as she sailed, great coils of black cable slipped into the sea. All went well for a few hundred miles.”

“Oh, Great Grandfather,” said Bobby, “what happened then?”

“The cable gave a great tug and snapped in two,” said Great Grandfather. “Every one on board was much disappointed and said to Mr. Field, ‘Better give it up. It can’t be done.’”

“But Mr. Field would not give up the idea. He decided to go about it a different way. He had the American ship and the English ship meet in the middle of the Atlantic Ocean. Then the workers fastened the two ends of the cable together, very firmly, and the ships began sailing away from each other. One went to Ireland and the other to America. Slowly the coils dropped over the side and slipped into the sea. And you can imagine how those men on the two ships felt. Every second they were afraid that the cable would part. On and on they sailed, playing out the coils until they finally reached the shores and fastened the cable. When the American ship reached New Foundland, Mr. Morse and Mr. Field had to wait

until they heard that the cable had been fastened to the shore of Ireland.

"Then every one who had been so sure it could not be done, praised the men who had been so determined to lay the cable.

"Bells were rung, cannons were fired, flags were hung up, and there was great rejoicing."

"Did they send telegrams over it?" asked Sister Sue.

"Yes, in August, 1858, Queen Victoria sent a message to our President Buchanan and he sent her a reply. But then, the telegraph stopped!"

"Oh, why?" asked Bobby.

"No one could tell. They just knew it wouldn't work. And so much money had been spent! Still Cyrus Field was not discouraged. He waited until after the Civil War was over.



Then he and his friends gathered together and bought the Great Eastern, which was a large ship for those days, to lay the cable. Imagine their dismay when the cable parted in the middle again!"

"Oh, Great Grandfather," said Sister Sue.

"Ssh," said Bobby to Sister Sue.

"But the Great Eastern started out again with the great coils of cable," said Great Grandfather. "This time it was a success. What do you think the Great Eastern did then?"

"What?" asked the children.

"Why, went right back into the center of the Atlantic Ocean and grappled with great hooks, pulled up the broken cable, and fastened the ends together. Then there were two undersea cables from England to America."

"Oh, goody good," said Sister Sue.

"Yes," continued Great Grandfather, "it was good. Now there are cables running all over the bottom of the sea, from country to country, so that news travels, in a very few moments, a great distance."

"How did they fix the cable?" asked Bobby. "Was it just a wire?"

"No, the cable is a cluster of wires covered with gutta-percha and yarn and iron wire," said Great Grandfather.

"What do they do now when it breaks?" asked Bobby.

"Just what they did before," answered Great Grandfather. "They go out in the ocean, grapple with hooks, pull the broken ends up, and fasten them together again."

"Isn't it wonderful!" exclaimed Bobby.

"Yes," said Great Grandfather, "we live in a wonderful age!"

ABOUT SHOES

BOBBY was lacing his sneaks. And he was provoked. In the first place he didn't like to lace his sneaks and in the second place he was in a hurry.

He wanted to work on his boat, for as soon as it was finished Great Grandfather was going to go with him to the park. Sister Sue and Great Grandfather and Bobby were going to make a day of it.

"If Delia were here, Bobby," said Sister Sue, "she'd tell you 'The more haste, the less speed.' But I won't tell you, myself." And Sister Sue laughed.

Great Grandfather was about to say something but just then the lacer broke.

For a moment Bobby said nothing. Then after a few moments, during which time Great Grandfather and Sister Sue looked at each other and Great Grandfather motioned Sister Sue not to laugh, Bobby looked up. When he saw the others watching him he simply had to laugh.

"I guess you're right, Sister Sue. But I'm in a hurry and I never seem to have time to finish my boat. Something always happens to keep me from it. I wish I didn't have to wear shoes at all."

"You'd get slivers in your feet," cautioned Sister Sue.

"Pshaw!" exclaimed Bobby. "People never used to wear shoes and you never heard of a hero getting a sliver in his foot, did you?"

For a moment Sister Sue was silent. Then she spoke up, "How about that statue Mother has in the living room. That boy's taking a sliver out of his foot."

"That boy has a thorn in his foot," said Great Grandfather, "and a thorn is much the same as a sliver. People did use

footwear long ago. But it all depended upon the climate, whether they wore shoes or sandals.

"Long ago in Norway and England, people used to wear shoes made out of the skin of animals with the fur side out and those too, were laced up, Bobby. Only the lacers were strips of leather instead of cloth. You'd have been just as provoked in those days.

"And you'd have been almost as provoked if you lived in a warm country for there they used to wear woven grass sandals. These they tied on with woven grass strings.

"Animals of course have pads and hoofs and fur on their feet, but men have always been called 'tender-feet.' They have had to make their own protection.

"Long ago in Egypt, if a man did go out walking barefooted, he had his slave carry his sandals along behind him, so he could have them if he needed them and also to show that the slave belonged to him."

"That was a queer custom," said Bobby.

"You see, shoes were a sign of ownership. In ancient days, when a girl was married, her father always gave a pair of her shoes to her husband, to show that now she belonged to her husband and should obey him. But that was before women began to vote," laughed Great Grandfather.

"After a while men began to wear shoes that were made of velvet and silk and the very softest leather. The toes were long and narrow and pointed; gradually they grew longer and longer, until,—What do you think they did with them then?" he asked.

"I don't know," said Sister Sue.

"They tied them up to their knees with jeweled chains," said Great Grandfather. "And the more money a man had the longer grew his shoes until at last a law was published, that anyone who wore long pointed shoes should be fined. You see, those long shoes took too much material to make.

“And then what do you suppose they did, Sister Sue?” he asked.

“What was it?” asked Sister Sue.

“Why then,” said Great Grandfather, “folks went right the other way. They had their shoes made short and square toed and very broad. The shoes grew broader and broader until the law had to be made over so that anyone who wore too broad shoes was fined. Wasn’t it funny?”

Both children laughed, and Great Grandfather went on with his story.

“All this time people had been wearing their shoes on either foot. I mean they had no right shoe for their right foot, and they had no left shoe for their left foot.”

“That’s the queerest of all,” said Bobby. “Why didn’t some one think of it?”

“Well, they would have been much more comfortable,” said Great Grandfather. “But it wasn’t until 1785 that anyone did think of rights and lefts. Then, though there were shoe shops, men used to go around from house to house and





CHINA

INDIAN

EGYPT





fit up the whole family with shoes, from the baby to the Great Grandfather. The cobbler would sit down on a low chair, and putting the leather over his lapstone, he'd pound and sew it into a shoe."

"All alone?" asked Bobby.

"Yes, Bobby, a man learned his trade well in those days. But after a while it was discovered that a man could work much faster at one kind of work. One man did the cutting and one did all the stitching.

"Then machines were made in the United States to manufacture shoes. As a result, today the United States turns out more shoes than any other country."

"What kind of machinery helped most?" asked Bobby.

"I think the sewing machine," said Great Grandfather.

"It must have been queer when they had their toes tied up to their knees," said Sister Sue, who really didn't care much about the way shoes were made by machinery.

"It was queer," said Great Grandfather, "but they did many queer things in those days. Why, at one time in the sixteenth century men wore their trousers or breeches very, very snug and the next thing they wore them puffed out very wide!"

"How did they keep them out wide?" asked Sister Sue.

"They stuffed them out with cloth and sometimes with feathers!" exclaimed Great Grandfather.

"Then they began to wear great starched ruffles around their necks," Great Grandfather went on, as soon as the children had stopped laughing. "And those starched ruffles or ruffs, as they were called, grew so wide that Queen Elizabeth had to have a guard at every gate leading into London. That guard had a pair of scissors, and if a man appeared with a ruff that was too wide, the guard cut it off before the man could enter London Town. You see, shoes weren't the only queer things they had in those days.

ABOUT SPOONS

“WHEN people wore ruffs and those queer trousers,” asked Sister Sue, “did they do many other odd things?”

“Would you think it queer if you heard that long ago people used to carry their own spoon with them?” asked Great Grandfather, in return.

“I certainly would,” said Sister Sue, quickly. “They never did!”

“I’ve read that they did,” said Great Grandfather. “In the first place, when people only ate fruit and berries they ate with their fingers.

“Later they learned to make fire and when they learned to make that, they began to cook and make what they called spoon-meat and soup and hotch-pot that was very juicy. Of course, they had to have something to scoop it out with. Then they made spoons out of a shell and a twig.

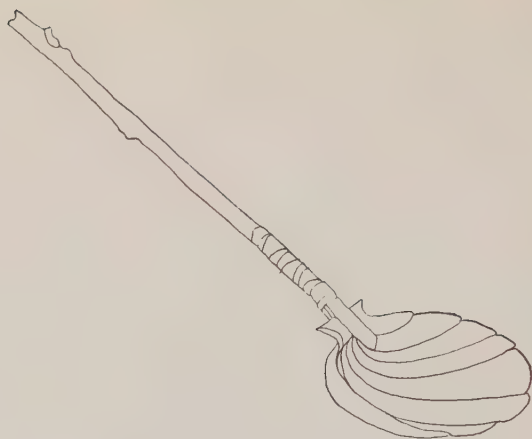
“The twig was split at one end, the ends pried apart and the shell slipped in. Then the ends flew together again. It made a very good scoop. Sometimes people used to have gourds with which they dipped up their food.”

“I know what a gourd is!” cried Sister Sue, very pleased to think that she did. “It’s like what Mother has to darn her stockings on.”

“Exactly, Sister Sue, but of course they used a gourd that had a long end, like a summer squash. They didn’t like to get their fingers in the spoon meat.”

“Perhaps they were getting dainty,” said Sister Sue.

“I think they were,” said Great Grandfather. “Then one day a man found that an animal’s horn would get very soft when it was heated. He found that, if he pounded it with a



stone or any other hard tool, he could make it into almost any shape. After that, horn spoons were used.

“Some of the spoons the Egyptians used were made of ivory or bone or bronze. A few spoons used by the early Romans had sharp pointed handles with which to open shell fish, like oysters and clams.

“But, since even the noblemen did not own enough tableware to serve company, everyone carried his own spoon and knife. The knife was thrust into his girdle, but the spoon either folded up and was put away in a pocket or hung on his girdle.

“Soon, spoons began to be very popular and were made of silver. In olden days spoons were given to children when they were born. Sometimes the end of the handle was carved into the figure of one of the twelve Apostles. And so the saying grew that, if a man had plenty of worldly goods, he was born with a silver spoon in his mouth.

“The queer wide ruffs also made a difference in the length of the handle of a spoon, for with a short handle it was difficult to reach over them.

"In the early days in America some families ate in trenchers instead of dishes. And in the middle of the table was a huge bowl filled with hash or spoon-meat.

"There was a salt cup which also was placed near the center of the table. Guests were always seated near the middle of the table—above the salt, they used to say."

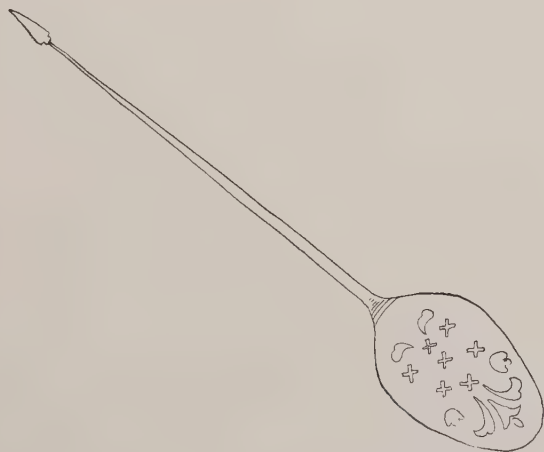
"Who sat below that salt cup?" asked Sister Sue.

"The children, almost always. By that time nearly every housewife had her own tableware, although most of the spoons were made of horn and wood and some of pewter, so that people did not have to carry their own spoons and knives around with them any longer."

"What was the trencher?" Bobby wanted to know.

"It was a block of wood with a bowl carved out of the middle. Some poor families did not even own enough trenchers to go around, so two children often ate out of the same trencher!"

"I'm glad I live now," said Bobby. "I'd feel like a puppy eating out of the same dish with my sister or brother."



SUBMARINES

BOBBY sat on the window seat reading a book by Jules Verne called *TWENTY THOUSAND LEAGUES UNDER THE SEA*. By the expression on Bobby's face one could see that he was greatly interested.

Suddenly he looked up.

"Great Grandfather," he said, "no one ever thought of submarines when this book was written. Where do you suppose he found his idea?"

"Well, Bobby, people had been talking of submarines for a long time before Jules Verne wrote his story of the Nautilus. Even during the Revolution, in 1776, submarines were known."

"Why, Great Grandfather, I never thought of such a thing. Who made the first one?" he asked.

"The first submarine that ever fired a torpedo was made by a man named David Bushnell.

"He had an idea that he thought would change all sea warfare. David Bushnell had the idea but he had no money and of course he had to have a great deal of money to build a submarine, even for the kind he was making.

"When he told General Israel Putnam about his idea, the General was very enthusiastic about it and loaned Bushnell the money to go ahead with his scheme.

"In July, 1776, Bushnell was all ready to use his undersea craft.

"In the Harbor of New York lay the British fleet. And in the center, lay Admiral Howe's flag ship, the Eagle, a huge ship with sixty-four mammoth guns.

"'I'll try my submarine out tonight', said Bushnell, 'and I'll choose the Eagle for my first target'.

"So, everything was made ready, and although Bushnell

was not able to go himself, he had found a very good substitute. Very early in the morning, while it was still quite dark, General Israel Putnam and his aid, Aaron Burr, and a few others met Bushnell and the man who was to take the submarine out into the harbor to blow up the Eagle.

“The submarine was called the Turtle because it was shaped like two turtles joined together and standing on end. It had a screw propellor that was worked by hand, and also valves that would let the water into a chamber to make the Turtle submerge, or sink down into the water.

“It had also pumps for pumping the water out, so that the submarine could rise again.

“Well everything was all ready. The tall man who was to take the Turtle out on its voyage squeezed himself down into the little submarine and pulled the cover down over him. He was now in a little water tight case. At first he bobbed along on the top of the water, but it was getting toward morning, and so, as he drew near the Eagle, he pushed the valves. Then the water rushed into the chamber below and the Turtle began to submerge. Down,—Down,—Down! He had with him a little phosphorous-covered compass and by its guidance he steered until he was underneath the hull of the Eagle.

“On the side of the Turtle was tied the bomb. It was an invention of Bushnell’s and ran by clockwork. The tall man bumped against the hull of the Eagle several times trying to fasten the bomb onto the Eagle’s side. But he had no luck at all. It simply wouldn’t fasten. Then he bumped against the other ships and still the bomb wouldn’t fasten as it was supposed to do.

“By that time, as the air in the Turtle was getting rather close, the tall man pushed the pumps and forced the water out of the Turtle and rose to the top of the water.

“Just then the watch on the Eagle spied the Turtle and the man’s head sticking out of it. He popped his musket at

it, and the Turtle promptly submerged. Then the man inside let loose the bomb which drifted away in the water.

“By this time the man inside the Turtle was very short of breath, indeed. He steered as well as he was able, toward the Battery where his friends awaited him, for he knew that General Washington and General Israel Putnam had some men watching for the Turtle. Finally the man reached the shore.



“Not very long afterwards, in fact in a very few minutes, the bomb exploded with a great splashing of water, high into the air.”

“Then, what did the British do?” asked Bobby.

“They spread their sails and hurried out of the Harbor, and by the time they came back the Americans were safely fortified farther up the river.

“After that several men worked on submarines. Robert Fulton made one, but, because he could get no one interested in it, he gave up the idea and made a steamboat instead. But I’ll tell you about that later.”

“Yes,” said Bobby, who was very much interested in ships, “but finish about submarines first.”

“Well,” continued Great Grandfather, “the South had a submarine during the war called the *Hundley*. It did blow up a Northern ship, but it blew itself up too. Then John Holland made a successful submarine. And next Simon Lake perfected the undersea boat.”

“And now it’s long and narrow,” said Bobby.

“Yes, and it doesn’t have to go along blindly any more. The submarine has a periscope which is a long pipe with mirrors so placed that they reflect from one to another. A man down under the water can see, by looking into the periscope, what is going on above on the surface.’

“Do they use the same idea when they submerge? Do they let the water in?” asked Bobby.

“They use almost the same method,” said Great Grandfather. “Now, however, they have engines. While they are on the surface oil is used, but when they submerge, electric engines run the machinery.”

“Well, David Bushnell had the right idea anyhow, didn’t he?” said Bobby.

“He certainly did,” affirmed Great Grandfather.

STEAMBOATS

FOR a time nothing more was said. Bobby went back to his boat and Great Grandfather read his paper. The room was very quiet.

Sister Sue picked up the bag on which she was learning to sew. Still no one said a word.

At last she went over to Bobby.

"I think the paint is all dry on your boat. I think you could hitch it up," she said.

Bobby began to laugh.

"Sister, you're funny. You are as funny as you can be. Who ever heard of hitching up a boat? You want me to put the rigging on?"

"Yes," said Sister Sue, smiling. For she was so pleased that someone was making some noise that she didn't care if they were laughing at her. Besides, she knew Great Grandfather would tell them some more stories if he were working on the boat. At least, he always had.

Great Grandfather laid down his paper.

"Going to rig up the boat?" he asked. "I brought some good stout fishline downstairs last night. Might be the very thing for the boat."

"Don't forget, Great Grandfather, that you are going to tell us about Robert Fulton," Sister Sue said after a few moments.

"Yes, that's right, I did say I would tell you about him. Well, in the first place, Robert Fulton started out to be an artist, and some friends of his family sent him to Paris to study. As a matter of fact, he really was a very good artist, but he preferred engineering. After a while he gave up painting and devoted his time to the invention of a submarine.

"His submarine was the first to be shaped like a cigar and had a folding mast and a conning tower. When it was tried out, it worked perfectly. But no country would become interested in it.

"Then Fulton thought he would make a steamboat. Several men had tried out models of steamboats, but none had been practical.

"Watt had perfected the steam engine and Robert Fulton planned to use that engine and to design a boat that would be a great success.

"He decided that a paddle wheel run by the engine, placed on either side of a boat, would churn the water up and so push the craft along.

"He ordered an engine from Watts and made a steamboat ready to sail on the Seine, in France. Imagine his feelings when on the night before the day set for the tryout of his boat, a great hurricane dashed the ship to pieces! He would not become discouraged, though. And as he had made friends with an American, named Robert Livingston, who was willing to let him have the money for his venture, he decided to try it out in America.

"That is how it happened that on Monday, August 17, 1807, a great crowd gathered to see Fulton's Folly, as many of them called it, blow up. But instead of blowing up, the Clermont, which was what Fulton had named his boat, swung around and started up the Hudson. What seemed very wonderful was that it was going against the wind. On it steamed, and after thirty-two hours reached Albany.

"The Clermont was a great success. Before long, it was remodeled and repainted and went into service, making regular trips between Albany and New York.

"The novelty of the trip was so great that people were willing to pay seven dollars."

"Did the Clermont cross the ocean?" asked Sister Sue.

CLERMONT





"No. The Clermont was built only for a river boat. But in 1819 a New Yorker by the name of Fickert built a packet boat with side wheels and sails. She was first christened the Savannah and was the first steamboat to cross the Atlantic Ocean, making the trip in twenty-seven days. Shortly after that, the Savannah was wrecked and for twenty years no one did anything about steamships.

"Then, England built five wooden ships, which were fitted up with paddle wheels. The next ships were made of iron. You see, they were gradually improving the steamboat.

"Then the Great Eastern was built!"

"The same one that laid the Atlantic Cable?" asked Bobby.

"The very same one, Bobby. And," went on Great Grandfather, "the Great Eastern had paddle wheels too.

"For thirty years the Great Eastern was the greatest ship afloat. After that came steel ships.

"Even today, every time a new ship is built it seems to be more wonderful than the one before, until I can't think how they can improve the next one."

"And, did the Clermont have sails?" asked Bobby.

"I'm afraid they didn't have much confidence in their engines at that time, for the Clermont and many who followed her were fitted up with sails," said Great Grandfather, smiling at Bobby.

Bobby then said just what Great Grandfather had expected, "Good, for I like sails!"

ABOUT PINS

SISTER SUE was making a pin-pricked picture. She had drawn the outline of a kitten on a card, and she sat on the window seat pricking every so far, a little hole on the outline with a pin.

Suddenly she gave a little cry.

"What's the trouble?" asked Great Grandfather.

"I've lost my pin," she wailed. "And that's the only one I could find anywhere."

"Don't weep over that," said Great Grandfather. "Here's one in the edge of my vest. Yours has, no doubt, gone where ninety-nine out of every hundred go."

"Where's that?" asked Bobby.

"Just lost," replied Great Grandfather. "But years ago pins were taken better care of. Why, a collection of pins used to be given for a wedding present."

"Then I bet the bride thought the giver was a stingy fellow," said Bobby.

"No, I think she was delighted. For pins used to be a great luxury. People who had very little money couldn't buy them. They used to have wooden skewers to hold their clothes together just as the cave man used to use thorns."

"Wooden skewers!" exclaimed Sister Sue.

"Like in meat?" asked Bobby.

"The very same, only smaller. But real pins weren't to hold clothes together at all. They were ornaments. Why, one queen had her velvet train trimmed with silver pins," said Great Grandfather.

"She must have looked like a walking pin cushion," said Sister Sue.

"Well, of course, these weren't common pins. They

were pounded out of silver and the heads were very beautiful, crosses and diamond shaped and stars and heads of animals and crowns.

"When pins were first made women were delighted with them and began to spend every penny they had on pins. Finally their husbands complained. They said their wives were using the house money to buy pins. And you'll never guess what the Queen did then, Sister Sue."

"No," answered Sister Sue. "I can't think."

"She passed a law that pins were only to be sold on New Year's and the second of January."

"But why?" Bobby interrupted.

"So the women couldn't buy them every day. They were only allowed to buy them once a year, on those two days. So, women began to put a penny, now and then, away in an old sugar bowl in the pantry, or in a cup. And every time they had an extra sum left, they'd run and stick it in the sugar bowl or with the savings, somewhere.

"And sometimes a husband would find the little sum tucked away.

" 'What's this doing here?' he'd ask.

" 'Oh, that's my pin money! Don't touch it!'

"And that is how a little sum saved began to be called pin money by everyone. And the very nicest present any woman could receive in those days was a collection of pins.

"After a while common pins began to be made, but even those were very expensive until they were made by machinery. Even now there is a great deal to making a pin, for first they run a long wire through a hole in a steel plate. Then a hammer strikes it and makes the head. They cut the wire off next and after that it hangs by its head and is pointed and polished."

"Who puts them in the papers, so evenly?" asked Sister Sue.

"That machine is the most wonderful of all," said Great Grandfather. "For the pins slide down a groove and before you know it there's your paper of pins all nicely folded up."

"Some different from what it used to be," said Bobby.

"And, Sister Sue, people used to make pin pricked letters and pictures, just like you are making now," said Great Grandfather.

"What are you going to name your boat?" asked Great Grandfather, as he and Bobby were putting the finishing touches on the rigging.

"I thought I'd name it Onward," said Bobby. "That's such a wonderful name for a boat."

Sister Sue pricked steadily on.



ABOUT WINDOW PANES

BOBBY and Sister Sue and Great Grandfather all had their heads close together over an old box.

Bobby and Sister Sue were having a gorgeous time, for every souvenir had a story. There was a long string of Army buttons and a little brass ink can which Great Grandfather had carried all through the war. There were pins and pieces of crystal, old chains and rings and some enormous cuff buttons; there were pieces of ribbon and gold braid.

"Oh, what's this piece of cloth?" asked Bobby, holding up a narrow piece of shining cloth.

"Bless my soul!" exclaimed Great Grandfather. "I haven't seen that in a long time. That piece of cloth was given to your Great Grandmother at the World's Fair. It was the Columbian Exposition at Chicago."

"It's queer, isn't it. All wiry and wiggly," said Bobby.

"You see, Bobby, it's made of spun glass," said Great Grandfather.

"Like our window panes?" asked Sister Sue.

"It's made out of the very same kind of glass. It was in 1893, that your Great Grandmother and I went to the World's Fair. And what we saw would fill a book. Among the things that interested your Great Grandmother the most was a glass dress made for the Princess Eulalia of Spain.

"The Libbey Glass Company made the dress. The spun glass was made by melting a glass rod over a blow pipe flame and then drawing the melted thread over a great revolving wheel. Then the cloth was woven by hand, silk thread running one way and the finely spun glass running the other."

"I'd like a dress made like that," said Sister Sue.

"It wasn't meant for such hard wear as that," said Great Grandfather. "But it was very beautiful and showed what could be done with glass. All sorts of wonderful things are made of glass. I don't know what we would do without it. It would be very trying to have to sit in the house in the winter and not be able to see out. But that's what the Pilgrims had to do, for they brought no glass with them, and used oiled paper in the windows that first winter."

"Wasn't glass made then?" asked Bobby.

"Yes, glass had been made but it wasn't brought over. Why, glass has been used so long," said Great Grandfather, "that no one really knows just how it was started. But, there is a story, though scarcely any one believes it, that ages ago some sailors were stranded on the coast of Palestine.

"They had with them in their ship, some blocks of soda. When they started to cook their supper on the sandy shore, they took some of the blocks of soda and placed them under the kettle to keep it straight. In the morning, when the fire was out, the sailors found a lump of pure glass. The soda and the sand had melted together and become glass.

"But that's only a story. Nevertheless, glass has been known for thousands of years and pictures of glass blowers have been found in the old Egyptian pictures. Some of the pictures were made about the year 3000 B.C. You can see glass blowing is extremely old."

"I should say it is," said Bobby, who was busy figuring. "I should say it was only about five thousand years old!"

"And the methods are almost the same now as they were then," said Great Grandfather.

"And is it still made of sand?" asked Bobby.

"Yes, Bobby, and to my way of thinking," said Great Grandfather, "glass making is very interesting. First the great fire is built and some broken glass is put into the vat. Then the finely sifted sand and soda and lime are put in.

And then the melting begins. The mixture of sand and lime and soda begins to get softer and softer and finally it begins to bubble, and grows very clear and thin, like water. And just as the impurities in jelly rise and have to be skimmed, so the impurities in glass rise to the top and a man skims them off."

"He skims off the skum," said Bobby while Sister Sue laughed.

"Yes," said Great Grandfather, "and then the liquid cools a little and along comes a man who is called the gatherer. He has a long pipe with a bell shaped end, and this he dips into the liquid.

"A tiny ball clings to the end but it is scarcely large enough. The gatherer dips in again and each time he dips he gathers a little more liquid and blows a little on the pipe. And each time the bubble on the end of the pipe grows larger.

"Then, when the bubble is quite large, the gatherer passes it to the blower. The bubble is now about the size of a water-melon. The blower is the expert.

"He blows and blows and soon he has to stand over a great pit, for the bubble has grown to be huge."

"Doesn't it ever burst?" asked Bobby.

"If it bursts, the mixture is not right at all, so that doesn't happen once in a hundred years.

"Then the bubble hangs very long and the glass blower blows and blows and as he blows he swings the great cylinder back and forth over the pit.

"Then they cut the cylinder from the pipe."

"How?" asked Bobby.

"They have a diamond on a long handle and they run that around the cylinder and it comes right off. Then the man takes a ruler and the diamond and makes a straight line down the cylinder. And another man comes along with a

cold iron and lays it on the mark. And there before your eyes the cylinder opens. But even then it isn't finished.

"Another workman has an iron rod with blocks of wood fastened to each end. And with this he flattens out the cylinder of glass into a flat sheet.

"Then the flat sheet is put on a cooling stone and run from one furnace to a cooler one and so it is gradually cooled until it is cold. Then the glass is cut and packed and ready for your window panes."

"Is that plate glass?" asked Bobby.

"No, plate glass isn't blown. It's poured on an iron table and rolled out like pie crust. The table has a rim around it and the glass is rolled until it just fits this rim. Then it's polished and scoured until it shines. The unpolished glass is used for skylights."

"Goodness!" exclaimed Sister Sue, "if you'd known how much work it takes to make a pane of glass you'd have been more careful of where you kicked your football that time it went through the garage."

"I should say so," said Bobby. "But I made more business for the glass blowers, anyway. What's this, Great Grandfather?" he asked as he held up a sharp edged dark gray stone. "Is it a piece of the Rosetta Stone?"

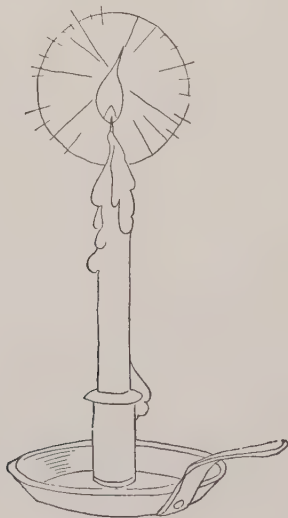
FROM PINE KNOTS to ELECTRIC LIGHTS

“NO,” said Great Grandfather, smiling, “that’s not a piece of the Rosetta Stone, it’s a piece of flint.”

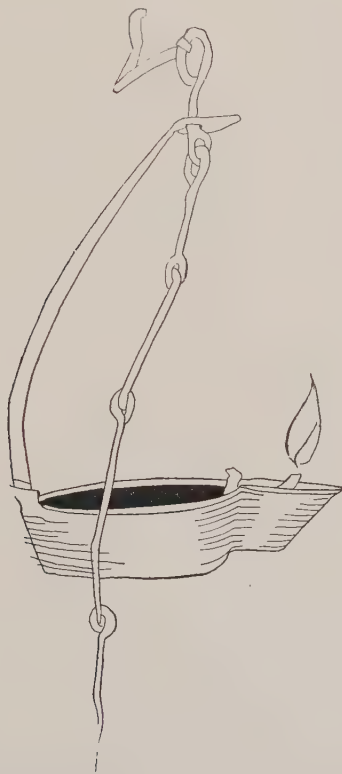
“Where’d you get it?” asked Bobby.

“I don’t remember, for I’ve always had it. It belonged in our old tinder box. You know that it hasn’t always been possible to walk into a room and press a button and turn on the light. People years ago didn’t have things quite so easy.

“When the colonists first came to America, they used to burn pine knots for light because wax candles were very expensive. Then they found that the little bayberry melted up made very fine candles. And next the fishermen discovered that the oil from a whale made very good oil to burn.



The colonists made tiny little lamps called Betty lamps with a chain to hang them on the wall and a piece of cotton or coarse wick, that hung out over the nose of this queer dish shaped lamp, when lighted. After a while pewter lamps and glass lamps were made to burn the sperm, or whale oil.



“But how do you suppose the candles or lamps were lighted?”

“With matches,” said Sister Sue promptly.

“Oh, but people had no matches in those days,” said Great Grandfather.

“With a splinter of wood from the fire place,” said Bobby.

“Ah, but if the fire happened to be out?” asked Great Grandfather.

"I give up," said Bobby.

"If Bobby does, so do I," said Sister Sue.

"Well," said Great Grandfather, "they would have had to use this little piece of flint, or one like it. You see, they would have had a tinder box. Those tinder boxes were round about the size of a pie plate. And in the box was always kept some charred linen or a cotton stocking tied up in a knot and burned on a pan in the fire place. Then this charred knot was put carefully in the tinder box. And with it was a piece of steel, maybe a piece of an old horse shoe. And there was also a piece of candle."

"How could they make a light out of that?" asked Sister Sue.

"Charles Dickens said 'that if they were lucky they could get a light in a half hour.' And it was a task, too. For the flint had to be struck sharply on the steel and held so close to the tinder that when the sparks flew they would light the tinder.

"While the tinder was smouldering the candle could be lighted."

"Oh, what a nuisance!" exclaimed Sister Sue.

"The people of those days thought that too. And so they made matches. At first they were called 'spunks' and were sharp-pointed splints of wood that had been dipped in phosphorus and then when dipped into sulphur burst into flame.

"When Lewis and Clark explored the great Northwest, they had with them presents and trinkets with which to buy food and supplies from the Indians.

"After a time, they were two-and-one-half years away from home, and the presents gave out. But Captain Clark had with him some of these matches. And when the Indians refused to give him food, he set one of the spunks afire. Immediately the Indians were terrified and begged him to put

out the fire, and they began to heap food and presents at his feet.

"But these spunks were hard to carry around and so in England matches were made and called 'Congreves.' Eighty-four were sold in a box which also contained a piece of 'glass paper' through which the match was drawn."

"Glass paper," repeated Bobby.

"Glass paper was a piece of paper with powdered glass glued on it. The box of congreves could be bought for twenty-five cents.

"After that matches were improved until they are turned out by the millions.

"Matches made lighting the lamps and candles very much easier, but people were improving on lighting also.

"In England, in 1801, William Murdock was working on gas. He took a tea kettle and filled it with coal and then fastened a little iron pipe to the spout of the tea kettle. Soon yellow gas began to form and escaped from the tea kettle into a little tank.

"When the little tank was full of gas, William Murdock fitted a little silver thimble over the end of the tube which had been attached to the teakettle. Then he made a tiny hole in the top of the thimble.

"Next he lighted the yellow gas which escaped through the hole, and found that he could read by its light. Then many streets in America and England were lighted by this artificial gas.

"Next the arc light that was operated by electricity was invented. But it was too large and had to be refilled with carbon too often to make it possible to use in homes. Therefore Thomas A. Edison, who was already a great inventor, set to work to find a way to use electricity in houses. And finally, after experimenting for a long time, he found that he could seal up, in an air tight glass bulb, a little loop of

carbonized cotton thread that glowed and shone when the current was turned on.

"This was such a very wonderful light that soon nearly every house was wired and fitted for the incandescent lamp, as it was called. Since then the inventors have found that a much stronger light can be made by using metal in the bulbs. And they also filled the bulb with nitrogen gas."

"You said Thomas Edison was already a great inventor," said Sister Sue. "What else did he make?"

"Oh, I know that," said Bobby. "The phonograph."

"That's true, Bobby," said Great Grandfather, "and he invented something that interests you even more than that. He invented the movie!"

"Did he really?" said Sister Sue.

"That and many other things," said Great Grandfather. "And now you see why I say that we live in a wonderful age."

HOW THE BEAVERS SAVED A TOWN

“MR. EDISON must have worked hard to invent all those things,” said Bobby.

“I should say he did,” said Great Grandfather, “he worked like a beaver!”

“Oh, Great Grandfather, you say such funny things,” said Sister Sue. “Who ever heard of a beaver working!”

“Have you ever seen beavers building their dams?” asked Great Grandfather.

“No, but I’ve seen them swim and I’ve seen them slap the water with their tails,” said Sister Sue.

“Well, you should see them build their houses, and their dams, too,” said Great Grandfather. “Then you’d know why I say Mr. Edison worked like a beaver.”

“Perhaps we’ll see some sometime,” said Sister Sue, hopefully.

“Not so long ago,” said Great Grandfather, “some beavers saved a town in Minnesota.

“A family of beavers were looking for a home, for the woods around their old home was being taken away. So, the mother and father and the two little beaver children traveled along the brooks until they came to a little stream, in a very quiet gully.

“Far off, they could hear the woodman’s axe, but it did not worry the little beaver family, for the spot they had chosen for their new home was very peaceful. And besides that, the woods were full of tender young trees of soft wood, just the kind that beavers like.



“They set to work at once and cut down a tall tree with their sharp teeth. It fell across the little brook.

“That night, all that was heard in the forest was the grinding and munching of sharp teeth on young trees and now and then the crash of one as it fell into the stream. When morning came the beavers were very tired and went to sleep, all cuddled close together in the edge of the brook.

“About four o’clock, when the sun was going down in the west, the beavers began to cut the young trees into short pieces and to float and push them down the brook. When the large tree across the stream was reached, the beavers piled the short pieces against it. Then the family began to carry tiny stones and small twigs and mud and pile it all against the large tree.

“They did a lot of walking back and forth over their work, and many times they paused to give the mud a smart smack with their spoon shaped tails.

“Each slap sounded like the pat of a butter paddle on fresh butter, only a great deal louder.

“When the dam was finished and the water had begun to rise the beaver family turned to their homebuilding.

“It was built very much like the dam except that smaller sticks had been used. Of course it was shaped more like a bee hive than like a house. Way down under the water was the entrance and a little sloping gangway led up to the living rooms. The walls were quite smooth, for where the twigs had been too long and had stuck through into the inside of the house, the beavers had cut them off with their sharp teeth. And they had been very careful to plaster the inside of their home as well as the outside, before they had put on the extra branches that made it look like a pile of sticks.

“The living room floor was very soft, for the rough floor was covered with soft pulp and leaves and even some pine needles.

"When fall came the house was completed. The water had risen slowly all summer until a pond had spread out over the little ravine's entrance. One day, when the beavers were gathering their stores of wood for the winter, some hunters crashing through the wood, spied the beaver dam.

" 'Look there, what a shame!' cried one. 'The beavers have flooded the woods. We ought to break this down.'

"But none of the hunters bothered to do that and they walked slowly away. Half way down the ravine one stopped to light his pipe. Then throwing the match aside, into the leaves, he went on.

"Soon a tiny flame shot up and began to creep along in the dry leaves and underbrush which crackled and snapped as the flames rose higher.

"Two days later, a tired and worn band of rangers sat down to rest. They had been fighting forest fires and now were sure the flames were all extinguished.

"Suddenly one of the Rangers sat up straight.

"A thin spiral of smoke was rising from the lower part of the ravine. And as they watched, it grew to be a cloud.

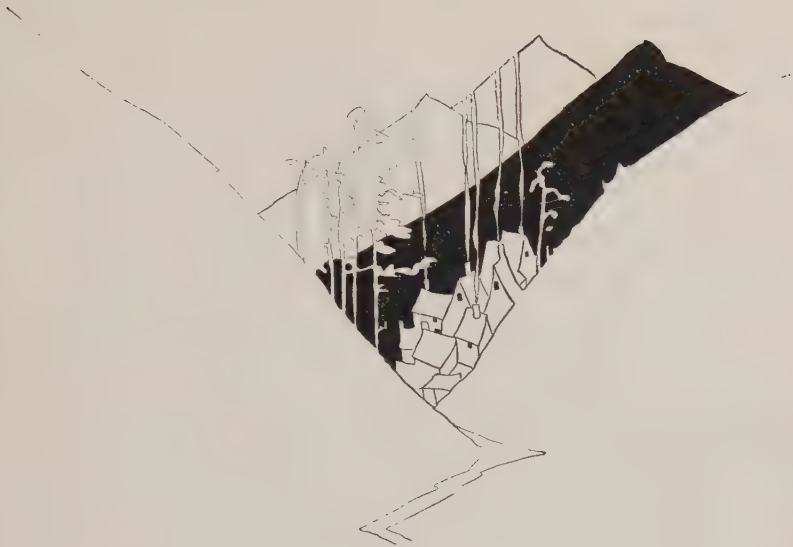
" 'If we could get water this fire in the ravine would be easy to put out. But, if it gets a start, I am afraid the village below will go, too,' said a Ranger. And he looked into the sky for a sign of rain. But the sun shone brightly and the air was dry.

"Then, the Rangers circled the burning ravine until they found the dam made by the beavers.

"It did not take the Rangers long to break a hole in the dam, though it was rather hard labor, for the beavers had done their work well.

"Down the gully dashed the released water, splashing and racing high, quenching the fires as it sped along.

"In the village men heaved thankful sighs and went to their work with lighter hearts. But the children played on



the doorstep as before, knowing nothing of the danger that had threatened, and nothing of the beavers' ruined dam.

"Four plump little beavers gazed in pained astonishment for a time; then very cheerfully started to repair the dam.

"Then they sat on top of the beaver house and watched. Soon the waters began to creep higher and higher, until it covered the little entrance.

"The mother beaver slipped from the top of the beaver home, into the waters of the pond. Her tail hit the water with a sharp clap. A second later three more smacks were heard as the rest of the family followed."

"And did the Rangers come back and tear down the dam?" asked Bobby.

"No," answered Great Grandfather, "for the Rangers and the people of the village were very thankful to the beavers for storing up the water, and so saving their homes."





SEALING WAX

“YOU’VE told us about shoes and ships,” said Bobby, one evening, “but you never told us anything about sealing wax.”

“That’s so,” said Great Grandfather, “but I thought you might be getting tired of real stories. Aren’t you?”

“I should say not!” exclaimed Bobby.

“Begin, ‘In the early days,’ ” said Sister Sue.

“Well,” said Great Grandfather, obediently, “in the early days, very few people could make the picture writing and they had to have some way of signing their name and of showing that an article belonged to them, and so they put their seal on it. And they carried the seal around with them.

“Sometimes it was carved on a precious stone and set in a ring.”

“Just like Mother’s amethyst ring,” cried Sister Sue.

“And like your own little seal ring,” said Great Grandfather.

“And the seal was sometimes worn, tied on a cord around their necks, and carved in onyx or marble,” went on the story. “These seals were pressed into some fine soft clay and the impression or picture of the writing or character on the seal was left on the clay. Then the clay was baked and the impression lasted for ages.

“The Romans often used lead into which they pressed the matrix as the carved stone or ring was properly called.

“But when the Normans came along with beeswax every one began to use it.

“Even after people learned to write, seals were used, for it was very difficult for any one to copy a matrix or seal. while it was rather easy to copy hand-writing.

“The seals were fastened to papyrus or to paper by strips of papyrus or ribbon run through the document and the ends fastened together with a seal. This was the same as signing a man's name.

“Then in the sixteenth century Spaniards made what was called Spanish wax. It was made of beautiful clear amber or lac melted in a pot over the fire. Some turpentine was added and a few drops of vermilion, which made it a beautiful red. And this mixture was poured into molds and melted up when they wished to use it. And the Spanish Wax is what we call sealing wax.



"Every country had its own Great Seal also.

"So, on the Fourth of July, 1776, Congress voted that a seal be chosen for the United States of America. Several men were asked to make up designs, but it was a long time before the Great Seal of the United States was finally decided upon.

"At last a design was submitted to Congress that pleased every one.

"It is a picture of the American Eagle, the bald eagle, denoting strength. In his beak he holds a banner on which 'E Pluribus Unum' is written, which means ONE OUT OF MANY, which we took for our motto, since we are many states united in one country. In one claw the eagle holds an olive branch with thirteen leaves, for there were thirteen original states, and in his other claw he has a bunch of thirteen arrows to show that we are ready for war, if it is necessary. Above the head of the eagle is a golden light breaking through a cloud that surrounds thirteen stars on a field of blue."

"Something like our flag," said Bobby.

"Yes," said Great Grandfather, "and on the eagle's breast is a shield with red and white bars. You see, the idea of our flag is blended into our coat of arms or seal."

Just then Great Grandfather opened the large dictionary and showed the children the page of the seals of all the countries.

In the very middle of the top of the page was the picture of the seal of the United States of America.

"Oh, Great Grandfather," said Bobby, "there are ever so many seals here."

"Yes, because every country has its Great Seal or emblem. Even the Real Americans, the Indians, had their own emblems, but those are called Totems."



ABOUT TOTEM POLES

“DON’T stop now, Great Grandfather, just as you are in the most interesting part,” said Bobby.

“Tell us about the totems of the Indians,” said Sister Sue.

“Well,” said Great Grandfather, “just as the United States has a Great Seal and every state has its own seal, each clan of Red Men or Indians has its own seal or emblem which is called a totem.

“Though the Indians did not use seals their totems were carved or painted on their possessions, on their graveposts and on their totem poles.

“Each Indian belongs to a clan and each clan has for its symbol an animal. And each Indian believes that in some way he is related to the animal which is the symbol or totem of the clan. Not for the world would an Indian harm one of his totem animals.

“In the northwest part of North America there is a large tribe of Indians called the Koluchian Indians.

“These Indians carve their totems on the top of high poles. Sometimes the poles are very high, maybe thirty or forty feet. And no matter how high the pole nor how huge the totem on the very top, it never sways in the wind. For the Indians have planted it deeply and firmly in the earth.

“In Alaska, in front of every Indian home stands his totem pole, bearing on the top the figure of the animal or creature which is the symbol of his family or clan. Holding up the totem pole, standing close to it, is a front piece. It is carved in all sorts of queer, weird figures, half human and half animal, and these are the histories of the clan or family, each figure meaning some event in the history of the family.

"Each weird figure rests with folded legs on the shoulders of the creature or being beneath it. And though they are very odd they are very imposing and the faces are very stern.

"When one of the Thlinket tribe of Indians decides to raise a totem pole he asks all of his neighbors and they come with presents and prepared to have a good time. They eat and dance and then they put up the pole.

"Sometimes the pole costs two hundred blankets, at three dollars each."

"Six hundred dollars!" exclaimed Bobby in awe.

"Totem poles have even cost more than that, for they must be carved by an expert. But some have been made with very crude tools.

"Though the Indians in other parts of North America had no totem poles, they had their own totems or symbols of their own family.

"And even though they joined some other tribe or moved away, or even changed their names, they never, never changed their totem.





"In the Song of Hiawatha," said Great Grandfather as he took a book of Longfellow's poems from the bookcase, "it mentions totems and tells how Hiawatha taught his people to write with pictures on the birch trees."

"Oh, read it to us," said Sister Sue.

"I'll read a little part of it," and Great Grandfather read,



"And he said, 'Behold your graveposts
Have no mark, no sign, nor symbol.
Go and paint them all with figures
Each one with his household symbol
With its own ancestral Totem,
So that all who follow after,
May distinguish them and know
them.'

"And they painted on the graveposts
Of the graves yet unforbidden
Each his own ancestral Totem
Each the symbol of his household
Figures of the Bears and Reindeer,
Of the Turtle, Crane and Beaver,
Each inverted as a token
That the owner had departed.



"And so, that's how the Indians made their totems,
painted on the birch trees.

"And," continued Great Grandfather, "there is an old story or legend, that when the animals grew so fast and there were more of them than there were men, the Great Sun Father changed the animals to stone.

"Then he said to them, 'That ye shall not be an evil unto men, but a great good, ye have been changed to rock. And ye shall serve men instead of devour them.'

"And so from that time on, the animals were the Red Men's totems and were either carved in stone or painted in pictures."

"Oh, but, Great Grandfather, aren't you going to read the rest of the Song of Hiawatha?" asked Bobby.

"Perhaps, it would be better for me to tell you the story of the real Hiawatha, the Maker of the Wampum," said Great Grandfather.

"Oh, that would be fine," said Bobby. "So, there really was a Hiawatha!"

HIAWATHA- MAKER of the WAMPUM

“A LONG time ago, before Christopher Columbus ever came in his little ship, the Santa Maria, to the New World,” and Great Grandfather seemed to gaze into a world far away—

Sister Sue sighed contentedly and Bobby looked very pleased. They knew it would be a good story by the expression on Great Grandfather’s face.

“—there lived in the central part of New York State,” continued Great Grandfather, “a noble band of Indians or Red Men. Tall and stately were these warriors but more stately and handsome than all was the Peace-chief, Hiawatha.

“Hiawatha had come with the others of the Iroquois nation of Red Men out of the North. They had left their homes in the forests around the St. Lawrence River, and in canoes filled with their household goods, they had paddled down the shores of Lake Ontario until they came to Oswego. There the great nation had separated. The Senecas had gone to the western part of New York, the Cayugas to the Finger Lakes away to the westward and the Oneidas and Mohawks paddled along the rivers and streams to the eastward, and the Onondagas chose the blue hills of Onondaga.

“Here in a small village on the shore of the creek where it empties into Onondaga Lake, lived Hiawatha, the Chief of the Turtle Clan.

“As the years had passed since the coming of the Iroquois differences of opinion had sprung up between the Mohawks and the Oneidas and the Cayugas and the Senecas and the Onondagas. And ever their war-chiefs grew stronger.



"Hiawatha, though he was brave, never went out with the war party. For Hiawatha who loved his people dearly, also loved peace. And he had made a plan to bind the five nations together in friendship.

"When the captives were brought in and the braves held their dance of victory, Hiawatha went away to the peace and quiet of his own lodge, for it seemed to him that the great forests held enough food for all and he could see no reason for the terrible battles and loss of life. And he began to be called the Peace Chief.

"One day in the moon of maize planting, when the warm spring sun was opening the tender buds on the maple trees and the forests were full of the songs of birds, Hiawatha called two runners to him.

" 'Go,' he said, 'take the painted sticks of invitation and tell each family of every town of the Onondagas that Hiawatha bids them to meet in council. Two suns from now the fires will be built.'

"Swiftly, like the fleet footed deer, the runners went on their errand, only pausing a moment at the door of each lodge of the Onondagas."

"Oh," sighed Sister Sue, rapturously, "I adore this story!"

"Sssh, Sister," warned Bobby.

"Two suns passed and down the trails in the forests, followed by their wives and children, and by way of the creek and the lake came the men of the villages.

"When they were all gathered around the great fire Hiawatha strode into the circle. Three times he slowly encircled the fire. And then he spoke.

"He told them of his plan to bind all of the Iroquois nation together in one family.

"Then rose Atotarho, silent and grim with a frown on his face as he gazed from one to another. Slowly the chiefs and men of the villages left the fire of the council, until only

Atotarho and Hiawatha were left. Atotarho, too, silently rose and left the fire.

"Deep in thought sat Hiawatha, who had waited all day for his answer. Then he rose to his feet and called the runners.

" 'Go in the morning,' he said, 'tell them that three suns from now the council fire will be kindled again. Say Hiawatha invites them.'

"But when the day came and the council fire was kindled, the circle was small for the chiefs and men had listened to Atotarho, the War-chief.



"And when Atotarho entered the circle, silently, one by one, the men rose, and departed."

"Oh, I think it was sad!" exclaimed Sister Sue.

"Sit still, Sister, and see what happened," said Bobby.

"Yes, Sister Sue," said Great Grandfather, "see what Hiawatha did then. Did you think that Hiawatha was discouraged? No, for once more he sent out the painted sticks. But when the council fire blazed high only two faces were lit by its glow, Hiawatha the Peace-chief's and Atotarho the War-chief's.

“Then Atotarho with a great smile of satisfaction left the fire of council.

“Hiawatha, with his fur robe pulled over his head sat thinking. At last he too rose and with a look of stern determination left the fire.

“His heart was heavy for he knew that his people were too fearful of Atotarho to listen to the peace plan.

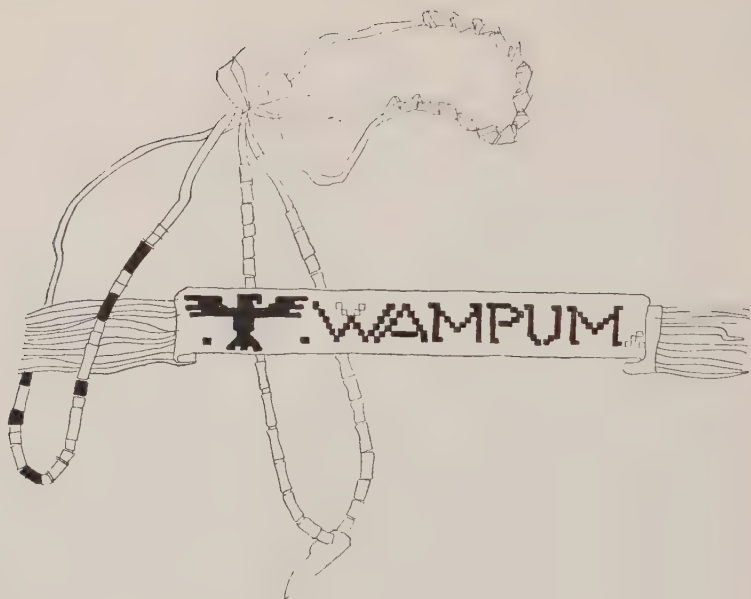
“Then Hiawatha said farewell to his lodge and the blue hills of Onondaga and passed out of his own country in sorrow.

“He turned his face to the eastward. Soon he reached the shores of Tully lake and sitting down beside the water









he filled his deerskin pouch with purple and white snail shells. Then he began to string them on sinews of deer. Several strings of the shells or wampum were completed and then Hiawatha went on his way.

"Past the Oneida villages he went, for no one asked him to enter. And then he came to the stronghold of the Mohawks, and there, outside the village, he built his campfire.

"Soon, two braves came and peeked over the top of the bushes and seeing a man stringing shells on deer sinew, they were curious and running swiftly, told their chief.

"And I hope they invited Hiawatha in," said Sister Sue.

"Yes, they did," said Great Grandfather. "As soon as Dekanawidah heard that a man sat outside of his village he told the runners to invite the stranger inside.

" 'Take this string of wampum', said Hiawatha as the

runners gave him the message, 'and say to him that when he sends me a wampum like this I will be glad to enter.'

"But Dekanawidah had no shells, but he made a string of partridge quills and sent it to Hiawatha. Since then all councils have been called by wampum.

"Dekanawidah had been an Onondagan and had joined the Mohawks and so was pleased to see Hiawatha.

"'But why should we unite with the other nations when we are well off as we are?' he asked Hiawatha.

"Hiawatha took five sticks and bound them together. Then he tried to break the bundle. But bound together as they were, the bundle of sticks could not be broken. However when he separated them the separate sticks broke easily in his hands.

"The bundle of sticks are the five nations bound together. The sticks are each of the nations, alone. One alone can be broken quite easily!

"After that the Mohawks agreed to the plan. And Hiawatha was adopted into their nation so that Atotarho could say nothing when Hiawatha was telling the other nations of his plan.

"Then Dekanawidah and Hiawatha set out in a white birch bark canoe to speak with the other nations. All listened except the Onondagas and their chief's heart was hardened from so many wars, and he turned his face away.

"At last Hiawatha, whose rightful place would have been Chief of the Five nations, because the plan was his, gave up his rights and told Atotarho, who was very selfish, that he might be chief if he would join the other nations. And so Atotarho agreed.

"On the day of the council, when the sun first peeped up in the east, came fourteen Onondaga Chiefs and seated themselves by the campfire in the old place of council. Then came ten Cayugas who traveled all of the way by water.

Only eight Senecas came, because they lived very far away. And then far off on the rosy water could be seen a white birch bark canoe followed by nine Mohawks and nine Oneidas in red elm canoes.

"As the white canoe came nearer and reached the shore the circle saw that the man in it was Hiawatha.

"He was dressed in wolfskin robes and on his head was a crown of feathers that reached nearly to the ground. It was made of white feathers from the heron and gray from the eagle and so on down the tail piece of the crown were feathers of every color, down to the yellow gold of the oriole at the very bottom.

"He looked very strong and handsome as he stood in his place and told of his plan. And then he showed the bundle of sticks.

"One after the other, the nations joined the great family. And so the League of the Five Nations was formed.

"The Five Nations were bound into one large family and their home stretched from western New York to the Hudson River.

"At last Hiawatha's work was done and he was happy. And when his canoe was seen no more on the waters his work went on as before and the Five Nations became strong and prosperous."

"Oh," said Bobby, "that isn't all, is it?"

"Tell us some more," said Sister Sue.

"That's all about Hiawatha," said Great Grandfather.

"Great Grandfather, I think the Onward is dry," said Bobby.

"It must be, it is," said Great Grandfather, as he felt of the little boat and tightened one of the fishline ropes.

"Do you think it will rain tomorrow?" asked Bobby anxiously.

"Let's look at the sky," said Great Grandfather.

The sky was dotted over with stars and the milky way shone like a faint ribbon and slightly to the northward beamed the great dipper.

"Do you think it will rain?" asked Bobby.

"No, Bobby," said Great Grandfather, as they stood looking up into the heavens. "I think that tomorrow we'll launch the Onward!"

"Hurrah!" cried Bobby.

"Hurrah!" repeated Sister Sue, as they went into the house.





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